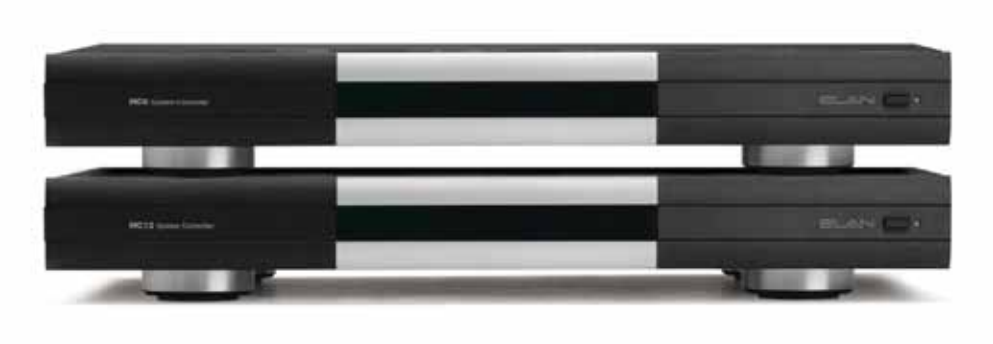
HC6/HC12

System Controller



INSTALLATION MANUAL

Preface

Purpose of this Manual

This manual provides step-by-step installation instructions and connection examples, along with basic user information for installation and ongoing use of the HC6/HC12 System Controller. This manual is written for the installer of this equipment.

Please see the Configurator Reference Guide and Integration Notes for programming information.

These can be found at www.elanhomesystems.com/dealer.

Organization

The following information is contained in this manual.

Safety Information	Provides a comprehensive list of safety practices and procedures allowing for the safe installation and operation of ELAN's HC6/HC12 System Controller.
HC6/HC12 Introduction	Provides an introduction to ELAN's HC6/HC12 System Controller, along with system features to include Front and Rear panel controls, indicators and connections, along with a short description of each.
HC6/HC12 System Design	Provides a system design application overview of the HC6/HC12 System Controller.
HC6/HC12 Connections	Provides a description of the HC6/HC12 System Controller system connections and direct connections from the HC6/HC12 to other components.
HC6/HC12 Operation	Provides location and function of switches and LEDs.
Precision Panels	Provides function and connection information for Precision Panels used in conjunction with the HC6/HC12.
Troubleshooting	Provides troubleshooting tables to help fix common problems that may be encountered when installing the HC6/HC12 System Controller.
Network Information	Appendix A provides information on IP setup and router port forwarding for the HC6/HC12 System Controller.
Rack Mounting	Appendix B provides specifications for rack mounting the HC6/HC12 System Controller.
Specifications	Provides equipment specifications for the HC6/HC12 System Controller.

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Safety Information

WARNING
RISK OF ELECTRIC SHOCK
DO NOT OPEN!
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instruction in the literature accompanying the appliance.
WARNING: TO REDUCE THE RISK OF FIRE OR SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
CAUTION

IMPORTANT SAFETY INFORMATION

Read Information — All the safety and operating information should be read before the appliance is operated.

Follow Information — All operating and use information should be followed.

Retain Information — The safety and operating information should be retained for future reference.

Heed Warnings — All warnings on the appliance and in the operating instructions should be heeded.

Wall Mounting — Mounting of this appliance should be done only by an authorized installer.

Ventilation — The appliances should be situated so that their location or position does not interfere with their proper ventilation. These appliances should never be placed near or over a radiator or heat register. These appliances should not be placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

Non-Use Periods — Appliances that are left unattended and unused for long periods of time should be de-energized.

Grounding or Polarization — Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one blade wider than the other blade. A grounding type plug has two blades and a third grounding prong. The polarized wide blade and the third prong are provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.

Power Cord Protection — Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.

Water— Do not use the apparatus near water.

Cleaning — Unplug the apparatus from the power outlet before cleaning. Use only a dry cloth to clean the apparatus.

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Power Lines — An outdoor antenna should be located away from power lines. When installing an outside antenna system, extreme care should be taken to avoid touching power lines or circuits, as contact with them may be fatal.

Object and Liquid Entry — Never insert objects of any kind through the openings of these appliances, as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Care should be taken so that objects do not fall and liquids are not spilled into the appliance through openings in the enclosure.

Servicing — Do not attempt to service these appliances yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Damage Requiring Service — These appliances should be serviced by qualified service personnel when:

- A power supply connection or a plug has been damaged or
- If liquid has been spilled into the appliance or objects have fallen into the appliance or
- The appliance has been exposed to water or moisture or
- The appliance does not appear to operate normally or exhibits a marked change in performance or
- The appliance has been dropped or the enclosure damaged.

Replacement Parts — When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

Safety Check — Upon completion of any service or repairs to this audio product, ask the service technician to perform safety checks to determine that the audio product is in proper operating condition.

Lightning Storms — Unplug this apparatus during lightning storms or when unused for long periods of time.

Attachments and Accessories — Use only attachments/accessories specified by the manufacturer.

Cart, Stand, Tripod, Bracket or Table — Use only with a cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip over.

Disconnect Device — Where the mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain operable.

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION:

Changes or modifications not expressly approved by ELAN could void the user's authority to operate the equipment.

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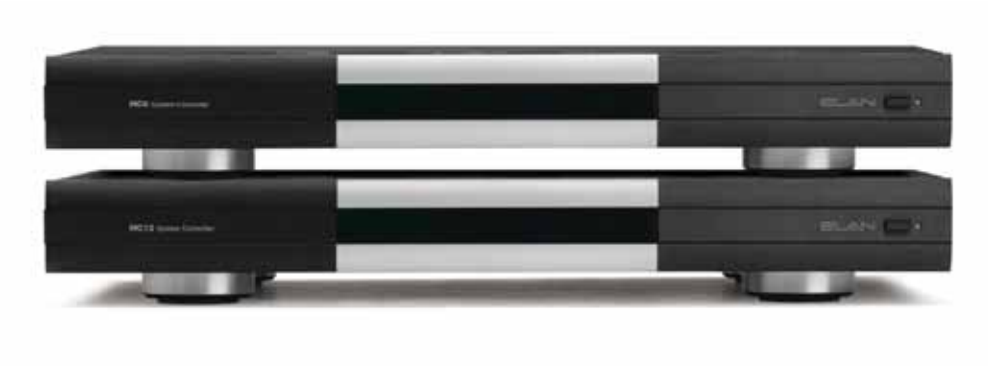

Items in Package:

- HC6/HC12 Controller
- US Power Cord (HC6/HC12)
- EU/UK/AU Power Cord (HC6240/HC12240)
- HCREM Remote (2 AAA Batteries Included)
- HA-CB-307 DB9M to RJ45 Adapters (HC6-6 / HC12-12)
- DB15 Male to Female Cable
- Rack Mount Brackets
- Quick Install Guide

Chapter 1: Introduction

The HC6/HC12 System Controller is an IP based device with multiple Serial I/O connections and IR outputs designed to facilitate the control of various third party systems such as Security Panels, Security Video and DVR, Climate, Lighting, Audio, Home Theater, Irrigation, Pool and Spa. Port types include Ethernet, USB, RS-232, RS-485, Vianet, Relays, Sense, IR, Audio and Video. Application examples include; home theaters, whole house audio and video distribution systems, and sports bar applications. The HC6/HC12 Controller includes Streaming Audio Outputs, Video Pass-thru and On-Screen Display.

Multiple sub-system control combined with expandability offer the perfect solution for medium and larger whole-house audio and automation control systems, and advanced event trigger options allow flexible automation opportunities.

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The ELAN Story

Located in Lexington, KY, USA, ELAN Home Systems has designed innovative multi-room audio/video systems since 1989. ELAN systems were the first to integrate music, intercom and TV distribution features that used the homeowner's stereos, televisions and telephones to create the whole-house entertainment experience. These Systems allow people to move from room to room, controlling centrally located equipment with ease.

ELAN's product line includes:

- Power Amplifiers
- Multi-Zone Pre-Amps
- Intelligent Keypads
- In-Wall LCD Color Touch Panels
- Wireless LCD Color Touch Panels
- Film Interactive Touchpads
- In-Wall and In-Ceiling Speakers
- Outdoor Speakers
- System Controllers
- A/V Controllers
- Telephone-Based Intercom Controllers
- Video Switchers
- Digital Music & DVD Management Systems
- Satellite Radios
- Accessories for Home Systems Installation
- Volume Controls

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HC6/HC12 Features

- **Multiple Input and Output Ports**

  Allows control of and control by a large variety of devices and inputs

- **2-way IP Connections**

  Provides quick control and up to date feedback for IP devices

- **Rack or Shelf Mountable**

  Provides convenient installation options

- **Internal Player Audio Outputs**

  Allows streaming audio from an on-board HDD (HC12) or Network Attached Storage (NAS) device (HC6/HC12)

- **Routable IR Outputs**

  Built in IR source control connections for up to 12 devices

- **On Screen Display with Component Video Loop Thru**

  Allows one input on a monitor to provide content video and OSD for control

- **Sense Trigger Inputs**

  Enables Trigger Activated Event Maps and Conditional Programming

- **USB Host Ports**

  Allows integration with phone modem devices for Messaging features

- **Integrated Relays**

  Two (HC6) or four (HC12) on-board relays provide additional automation capabilities

Important Note: The HC12 has an internal hard drive. Do not move the HC12 when it is powered up. Impact or jarring can damage the hard drive.

Before moving the HC12, power the unit down and allow one minute for the drive to spin down.

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Applications

Applications enable control of various sub-systems like Lighting, Security, HVAC, Media, etc. Pro Apps add features to those that come with the System Controller

Application Configurations (subject to change without notice)

Application	Included With Controller	Added with Pro App
Media	Unlimited ELAN A/V Controllers Unlimited Sunfire A/V Receivers Unlimited Display Devices 1 A/V Receiver (any Brand) Unlimited in-home sources	Unlimited A/V Controllers (any Brand) Unlimited A/V Receivers (any Brand)
Climate	2 Thermostats History	32 Thermostats
Lighting	16 Loads or System Scenes Unlimited g! Viewer Keypads Unlimited g! Viewer Scenes History using Graph Object	Maximum Loads/Scenes available
Security	1 Partition 8 Zones History	8 Partitions 256 Zones
IP Camera	2 IP Video Streams	16 IP Video Streams
DVR	Not Available	Records all Cameras
Messaging	1 Voicemail Box Internal Voicemail	8 Voicemail Boxes Internal and Telephone Voicemail Remote Message Retrieval Remote House Control Text-To-Speech
Irrigation	16 Groups (Virtual, for Demo Only) 256 Zones (Virtual, for Demo Only)	16 Groups 256 Zones
Pool/Spa	Virtual (For Demo Only)	All Supported Features
Other	Generic Serial Devices IR Devices Input/Output Devices E-Mail UPS	

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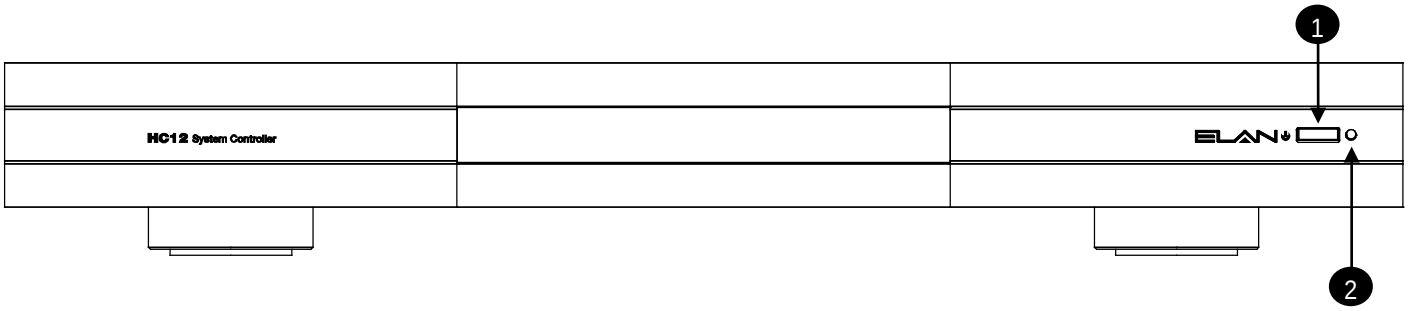
HC6/HC12 Front Panel Display

Figure 1-1: HC6/HC12 Front Panel Display



Item	Function
1	**Power Switch**
2	**Power LED**

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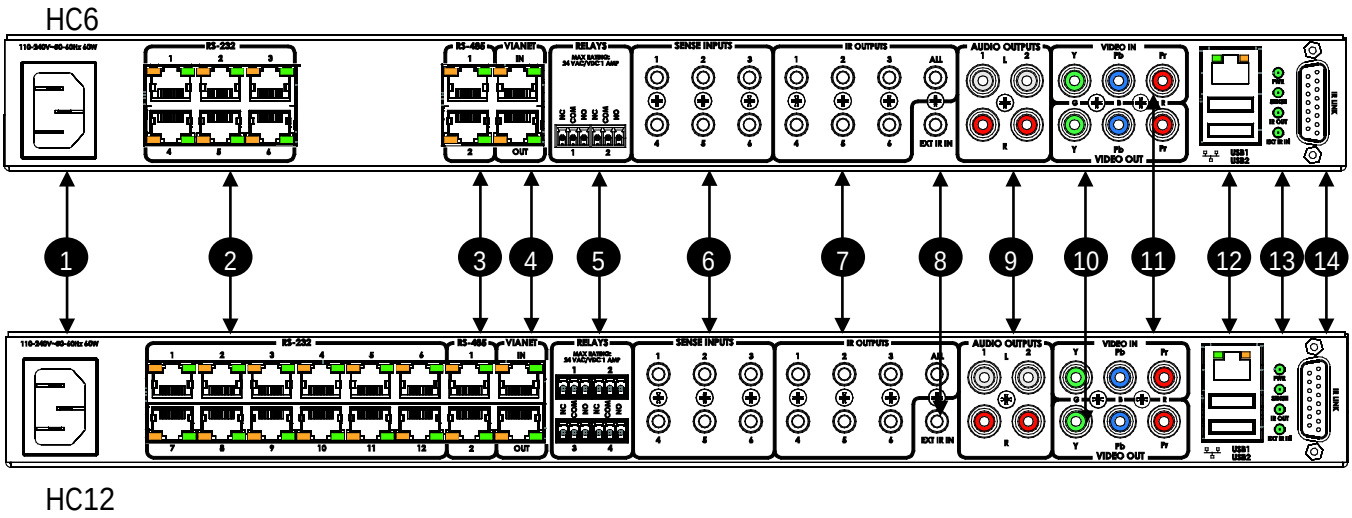
HC6/HC12 Rear Panel Connections

Figure 1-2 HC6/HC12 Rear Panel Connections



Item	Function	Item	Function
1	**AC Power Connector**	8	**External IR Input** Allows IR to trigger Event Maps for automated sequences
2	**RS-232 Comm Ports** Control Inputs / Outputs - The HC6 has 6 RS-232 ports and the HC12 has 12 RS-232 ports.	9	**Audio Outputs** Dual independent line level outputs for the Internal Player
3	**RS-485 Ports** Additional Control Connections	10	**Component Video Output** Passes source video and On-Screen Display
4	**VIANet Loop Connections** Interfaces with ELAN components	11	**Component Video Input** Input for source video
5	**Relay Connections** Provides automated features. – The HC6 has 2 relays and the HC12 has 4 relays.	12	**Ethernet and USB Ports** Network and USB modem connection
6	**Sense Inputs** Used for conditional programming and to activate Event Maps.	13	**Status Indicator LEDs** Power, Sense and IR Activity feedback
7	**Source IR Outputs** 6 routed IR ports and 1 IR ALL Out port.	14	**IR Link** Provides 12 routable IR outputs for system expansion

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Chapter 2: HC6/HC12 System Design and Applications

Introduction

The first step to a good design is to map the system. It is advisable to mark up a copy of the house floor plan with speaker, touchpad, touchscreen, volume control, and equipment locations etc. Make sure that all locations are decided upon before pre-wiring commences so that all necessary wiring and installation hardware is in place. This unit will be interfacing with other components such as amplifiers, source components, communications controllers, and user interfaces, so it is essential that ALL system components are accounted for prior to the pre-wire stage.

Secondly, make a detailed list of all components. Include source equipment, touchpads, touchscreens, volume controls, amplifiers, communications gear and the HC6/HC12 itself. Be sure to include necessary electrical boxes, structured wiring enclosures, telephone lines, rough-in brackets, patch cords, power supplies, etc.

Particular care should be taken to ensure all sub-system wiring is in place as well. Security systems, lighting, climate controls, etc, all have specific wiring requirements. Verify all necessary wiring is in place. Refer to the Integration Notes for the devices that you are installing. These can be found at www.elanhomesystems.com/dealer.

After the drywall is up is not the time to realize that the control wiring for the 3rd floor thermostat was overlooked.

Pre-Wire

This section explains the specifics of pre-wiring for an HC6/HC12 system. Care should be taken at this stage to ensure a properly operational system.

Most system wiring is “home-run” from the device being installed (a touchpad, for example) back to the equipment location.

The table on the following page provides an overview of various devices that may be integrated with the System Controller and the appropriate wiring for them.

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ELAN pre-wiring recommendations for connections to the HC6/HC12

Item	Description
ELAN HC6 or HC6/HC12 System Controller	Control: Category 5 network cable External IR In: 3.5mm Stereo Cable Source IR: DB-15 Male to Female Cable (Included with HC6/HC12) Internal Player Audio: RCA Interconnect Cables
TS7 Touchscreens	Control: Category 5 network cable Power: 2 Conductor (16 AWG) Video: RG-6 or RG-59 Coaxial Cable
TS2 Touchpads	Category 5 cable
IR Receivers	Category 5 cable
Volume Controls	Control: Category 5 cable Speaker Wiring: 16-18 AWG 2 or 4 conductor Use stranded, twisted pair speaker wire between amplifiers and volume controls, and between volume controls and speakers. Use Cat-5 to power electronic volume controls and for volume control override when used with an ELAN C2 Communications Controller.
Speakers	16-18 AWG speaker wire Use stranded, 2 or 4 conductor speaker wire between amplifiers and speakers.
Remotely Located Sources	Audio: Category 5 cable Video: RG6 or RG59 coax (if necessary)
ELAN C2 Communications Controller **(FUTURE APPLICATION)**	Category 5 cable When using an ELAN C2 Communications Controller, run Cat-5 for telephones and door stations. See the C2 Installation Manual for details.
Sense Inputs	Category 5 cable (3 conductors used) Use Cat-5 to extend sensor leads, if necessary.
System Audio	RCA Interconnect Cables

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Applications

This section describes typical applications using the HC6/HC12 for control. These are all basic in nature and should be used for guideline purposes only. Each application can be augmented as needed for individual circumstances. This section is for overall design purposes.

Please see Chapter 3: HC6/HC12 Connections for specific wiring configurations.

HC6 Controlling an ELAN M86A

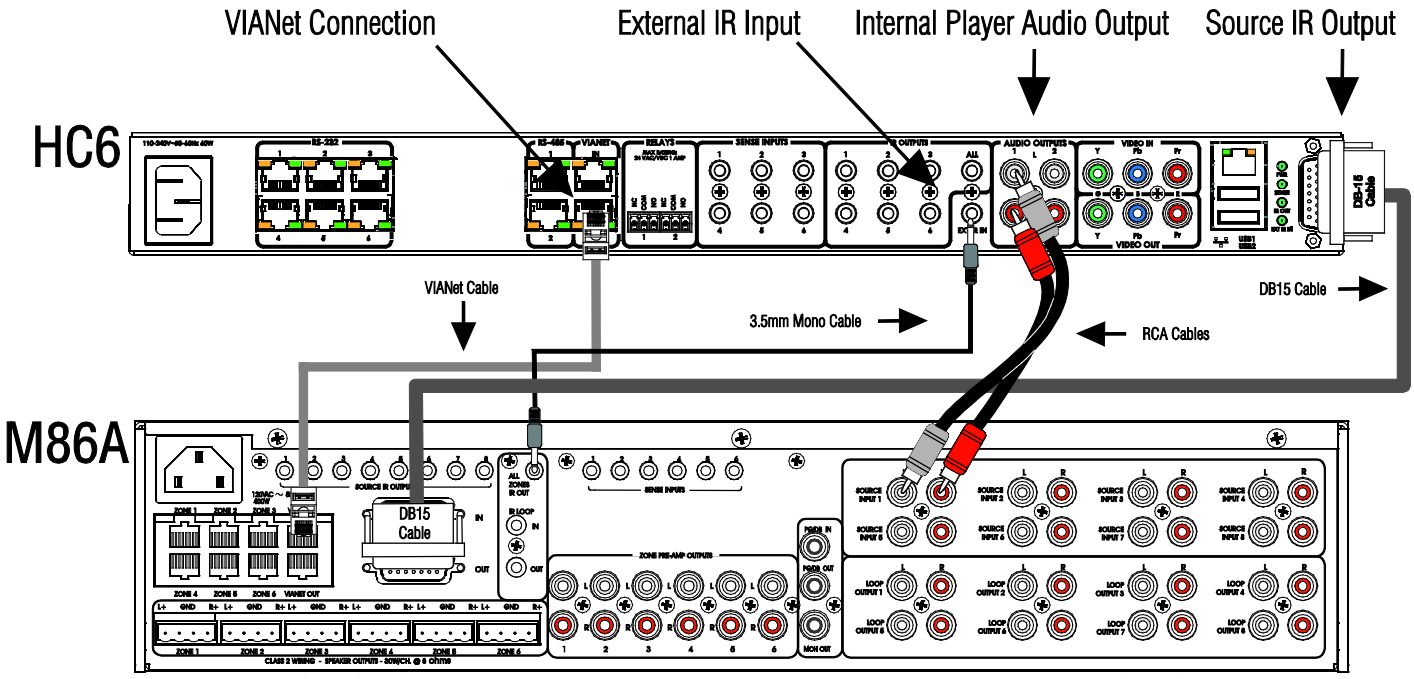
The M86A Multi-Room Audio Controller is specifically designed to be controlled using the HC6 or HC12 System Controller.

Connections include IR Output, External IR Input, and Internal Player line level audio. The HC6 uses the VIANet connection to control the M86A. See Figure 2-1 for connections between the HC6 and M86A. HC12 connections are identical.

In the ELAN configuration software, program the HC6 to control the M86A. See the Integration Notes at www.elanhomesystems.com/dealer.

The M86A manual covers additional connections for sources, source IR outputs, speakers and other devices.

Figure 2-1: HC6 / M86A Connections



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HC12 Controlling an ELAN S86A and V85

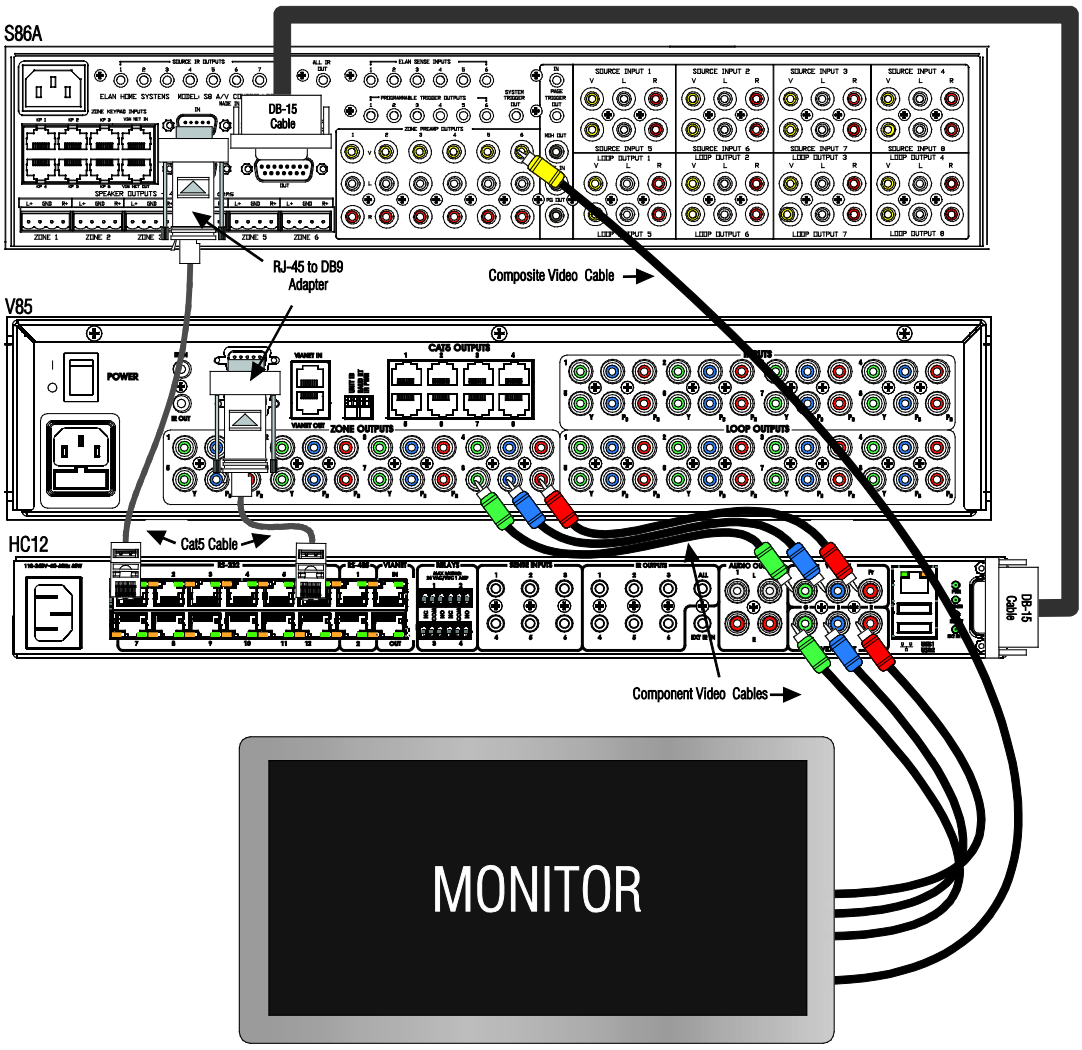
Figure 2-2 shows an HC12 serially controlling an S86A and a V85 component video matrix switcher.

The V85's component video output is routed through the HC12 to a monitor. This allows component video from multiple sources and the On Screen Display (OSD) of the HC12 to be viewed on the monitor. Composite video is routed directly from the S86A to a composite video input of the monitor.

In the ELAN configuration software, program the HC12 to control the S86A and the V85. See the Integration Notes at www.elanhomesystems.com/dealer.

The S86A and V85 manuals cover additional connections for sources, source IR, speakers and other devices.

Figure 2-2: HC12 / S86A / V85 Connections



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HC12 Controlling an ELAN S128P with a C2 Communications Controller

(FUTURE APPLICATION)

Figure 2-3 on the following page shows an HC12 controlling an S128P serially and interfacing with a C2 Communications Controller through the VIANet connection.

The S128P's component video output is routed through the HC12 to a monitor. This allows component video from multiple sources and the On Screen Display (OSD) of the HC12 to be viewed on the monitor. The VIANet connection to the C2 allows for automated features using Event Maps based on C2 functions. The Music On Hold and Page/Doorbell Audio connections from the C2 to the S128P are also shown.

In the ELAN configuration software, program the HC12 to control the S128P and interface with the C2. See the Integration Notes at www.elanhomesystems.com/dealer.

The S128A and C2 manuals cover additional connections for sources, amplifiers door stations and other devices.

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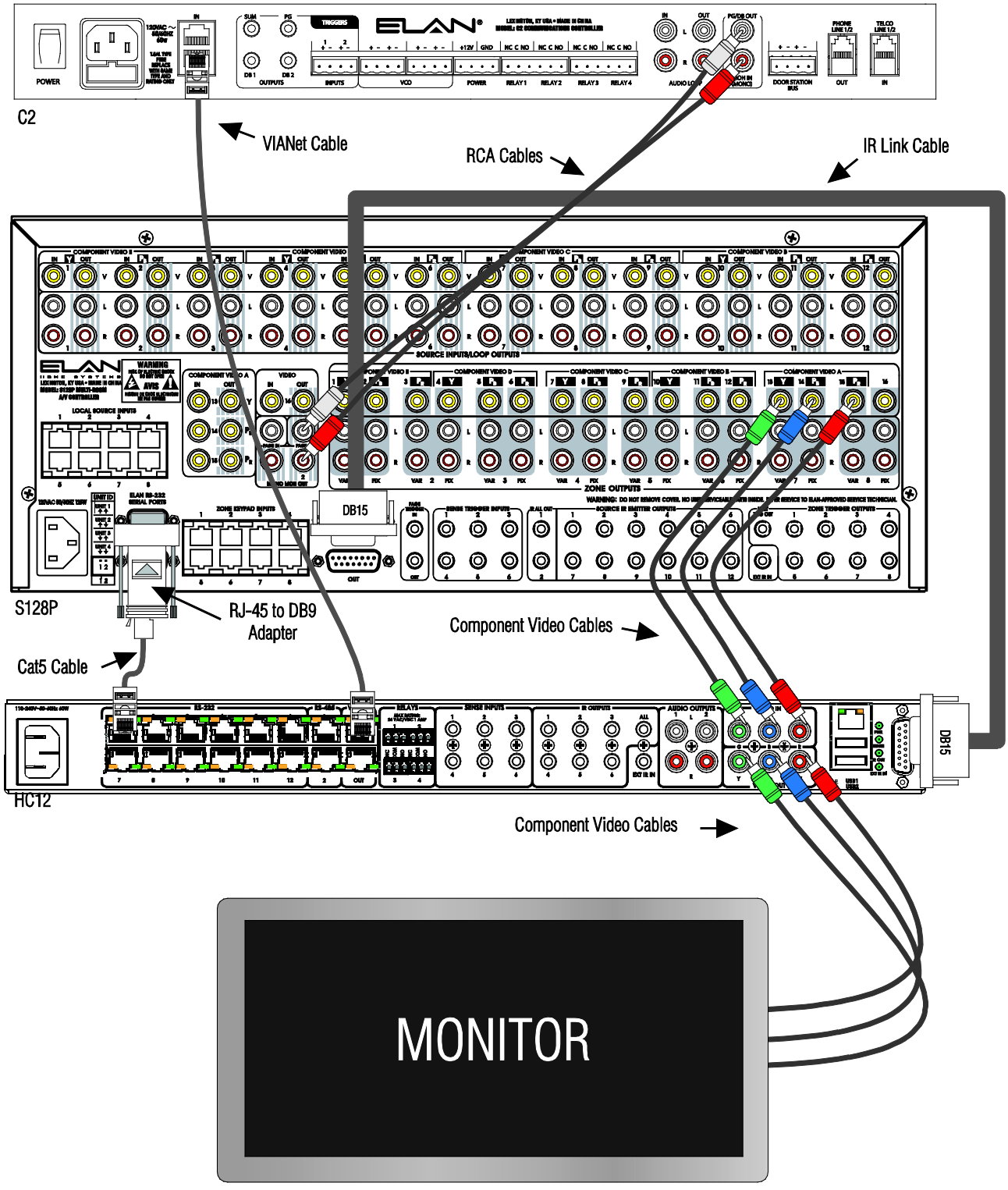
Figure 2-3: HC12 / S128P / C2 Connections



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HC6 Internal Player and IP Video Server

Both the HC6 and the HC12 can play streaming audio files using the Internal Player. **(Uncompressed WAV and constant bit rate MP3 formats only.)** While the HC12 has an integrated hard drive for file storage, the HC6 requires a Network Attached Storage (NAS) device to hold the files. See Figure 3-11 on page 29 for audio connections.

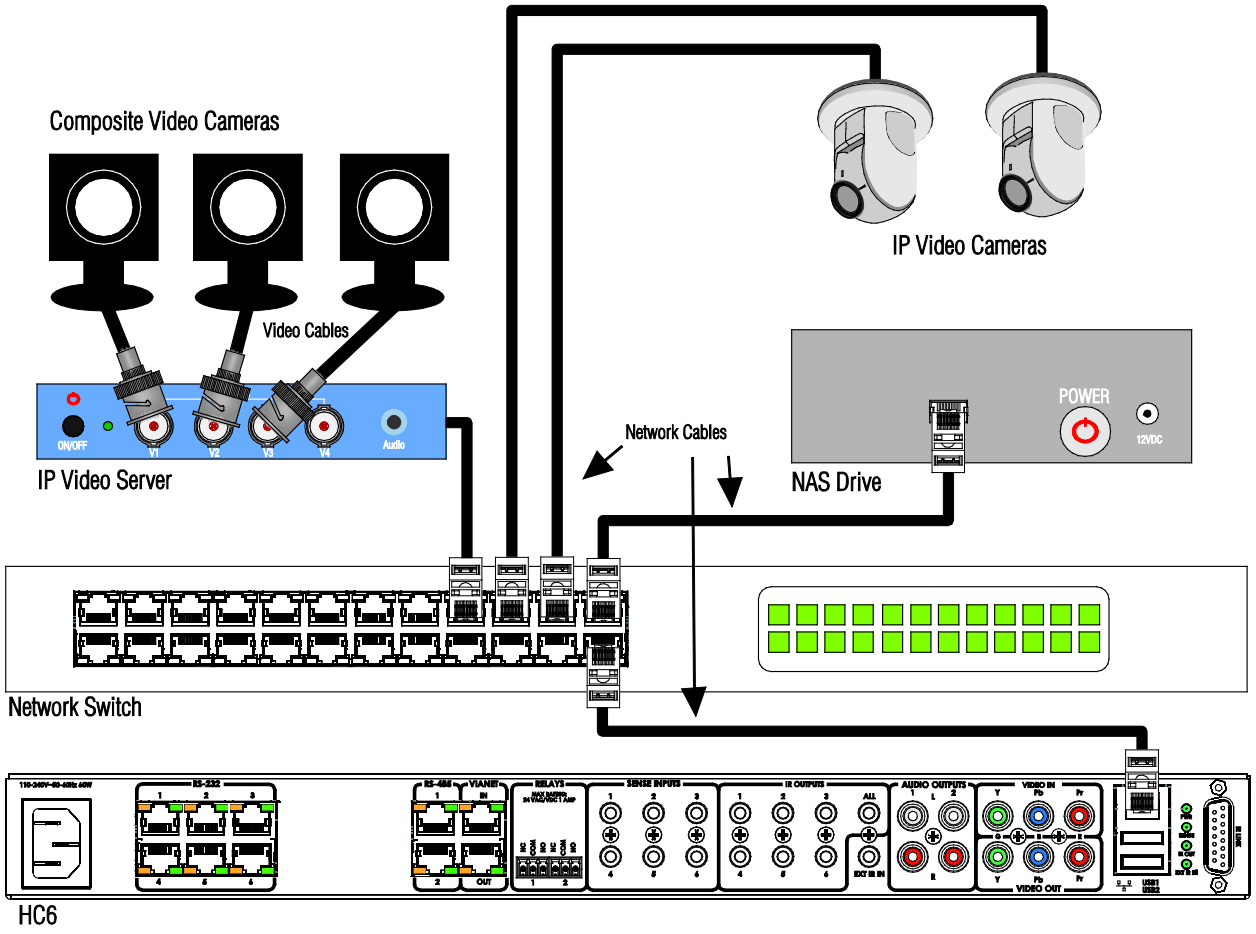
IP Video Servers are used to convert composite video inputs (usually from door station cameras) to IP data allowing video to be seen using a computer's Viewer or Touchscreens and for security DVR functions. IP video sources are also displayed on the component video output of the System Controller for viewing on a TV / monitor.

Figure 2-4 shows the typical network wiring for these applications.

In the ELAN configuration software, set up the HC6 Internal Player and NAS drive and program the interface for the video server and IP cameras.

See the Integration Notes at www.elanhomesystems.com/dealer.

Figure 2-4: IP Video Server / NAS Integration



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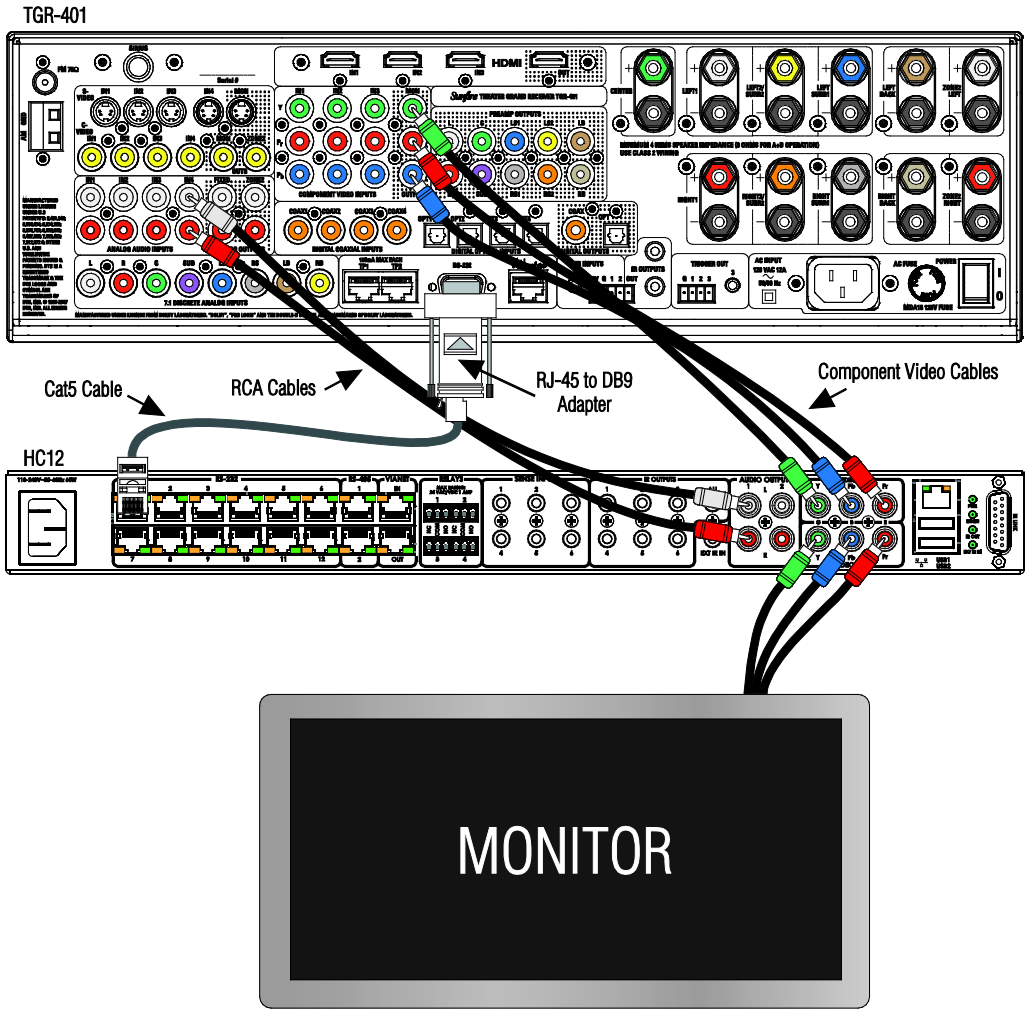
HC12 Controlling a Sunfire TGR-401 Receiver

The HC6/HC12 can be configured to control a number of 3rd party A/V receivers using serial or IR commands. Figure 2-5 shows an HC12 controlling a Sunfire TGR-401 with serial commands. The Internal Player is being used as a source. The component video out of the TGR-401 is connected to the video input of the HC12 and the component video output of the HC12 is connected to an input on the monitor. This allows source video, the TGR-401's On Screen Display (OSD) and the HC12's OSD to be viewed on the monitor without the need to switch inputs on the monitor. Comm port #1 of the HC12 is connected to the RS-232 input of the TGR-401 using a DB9-RJ45 adapter.

In the ELAN configuration software, program the HC12 to control the TGR-401. See the Integration Notes at www.elanhomesystems.com/dealer.

The TGR-401 manual covers additional connections for sources, speakers and other devices.

Figure 2-5:HC12 / Receiver Connections



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Chapter 3: HC6/HC12 Connections

Connections to the HC6 and HC12 will vary depending on the scope of the installation and the other devices being integrated. The connections include: RS-232, RS-485, VIANet, Relay, Sense Input, IR Output, External IR Input, Audio Outputs, Component Video Inputs and Outputs, Ethernet, USB and IR Link connections.

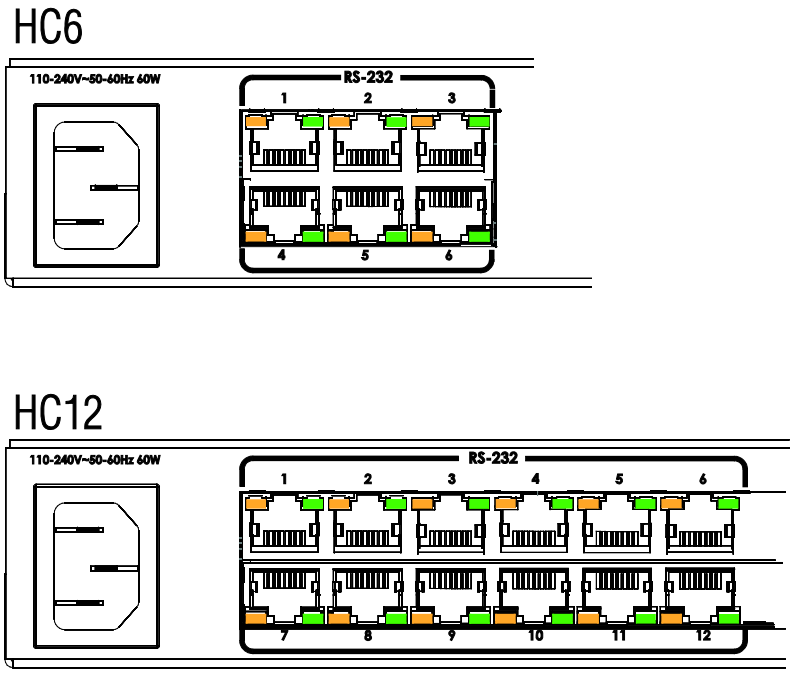
Connections using Precision Panels are covered in Chapter 5: Precision Panels.

RS-232 Connections

These connections are used to integrate with RS-232 controlled devices to provide control and feedback and to allow RS-232 commands to trigger Event Maps. Use of RJ45 to DB9 adapters is generally required for connections to RS-232 controlled devices.

As shown in Figure 3-1, the HC6 has six RS-232 ports and the HC12 has twelve RS-232 ports. Ports 1 and 2 have full hand-shaking capabilities and ports 3 and up have partial hand-shaking.

Figure 3-1: RS-232 Connections



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RS-232 Connections (Continued)

The table below shows the 568A and 568B color codes and the function of each conductor of the RS-232 ports. Note that Comm ports one and two use pins two and three for hardware handshaking. Some 3rd party devices require these connections.

See the Integration Notes for the devices you are connecting to determine which Comm Ports and DB9 to RJ45 adapters are appropriate

RS-232 Port Pin #	568A Color Code	568B Color Code	Function (Ports 1 & 2)	Function (Ports 3 +)
1	White/Green	White/Orange	N/C	N/C
2	Green	Orange	DCD	N/C
3	White/Orange	White/Green	DTR	RTS
4	Blue	Blue	GND	GND
5	White/Blue	White/Blue	RXD	RXD
6	Orange	Green	TXD	TXD
7	White/Brown	White/Brown	CTS	CTS
8	Brown	Brown	RTS	RTS

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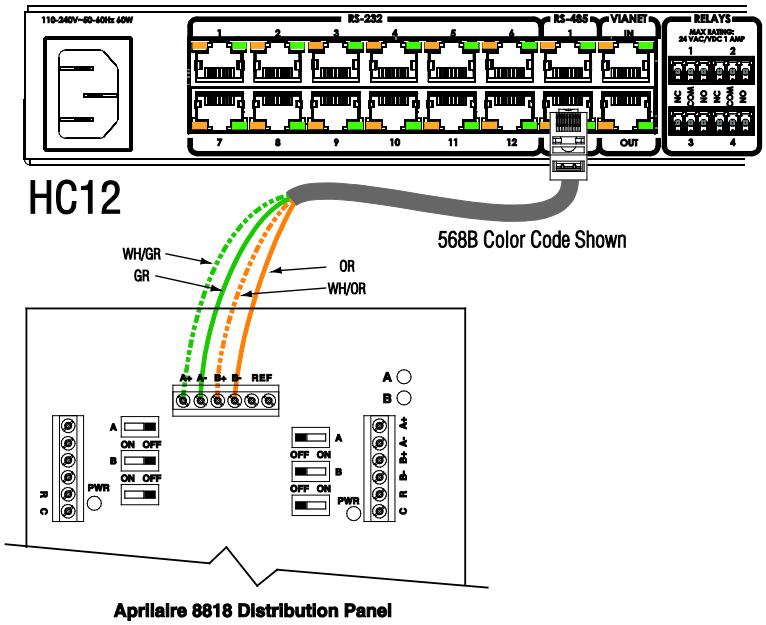
RS-485 Connections

The RS-485 ports allow connection to Full Duplex (Aprilaire® thermostats, for example) and Half Duplex (Pentair Water Pool and Spa® controllers, for example) RS-485 controlled devices without using adapters. Figure 3-2 shows an example of full duplex connections using the 568B color code. Refer to the Integration Notes for the device you are integrating for wiring and programming specifics.

Many companies label the RS-485 connections as "A+, A-, B+," and "B-." however other naming conventions are also used. The table below shows equivalent terms that may be encountered. Use the appropriate connections for the device to be integrated.

RS-485 Port Pin #	568A Color Code	568B Color Code	Naming Conventions:		
1	White/Green	White/Orange	RxD +	RD (B)	B+
2	Green	Orange	RxD -	RD (A)	B-
3	White/Orange	White/Green	TxD +	TD (B)	A+
4	Blue	Blue	N/C		
5	White/Blue	White/Blue	N/C		
6	Orange	Green	TxD -	TD (A)	A-
7	White/Brown	White/Brown	GND	GND	GND
8	Brown	Brown	N/C		

Figure 3-2: RS-485 Connections



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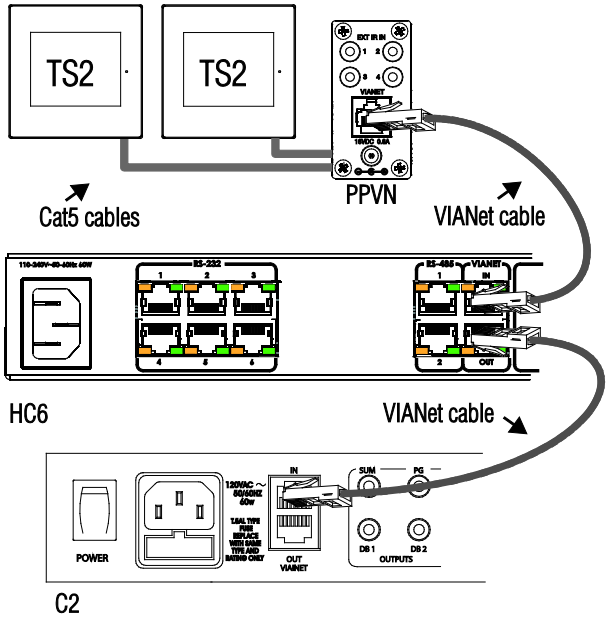
VIANet Connection

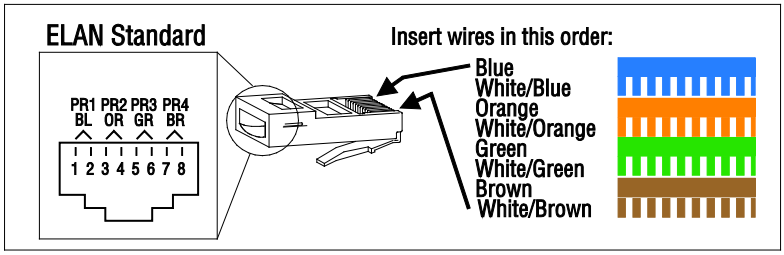
The VIANet connection allows the HC6 and HC12 to receive VIANet commands from TS2 Touchpads (connected to PPVN Precision Panels); transmit source and system status to the TS2s and to communicate with ELAN VIANet devices like the M86A and the C2 Communication Controller. See Figure 3-3.

Figure 3-3: VIANet Connections



This connection uses Cat5 terminated with the ELAN standard color code shown in Figure 3-4.

Figure 3-4: ELAN Standard Color Code



It is important to use the ELAN standard color code for VIANet connections. VIANet data travels on conductors 3 and 4 and a twisted pair must be maintained for proper functionality.

NOTE: The combined wire run TOTAL of all devices on VIANet can't exceed 2000' or 1000' for any single run. Use of VIANet Repeaters is required for systems that exceed these guidelines.

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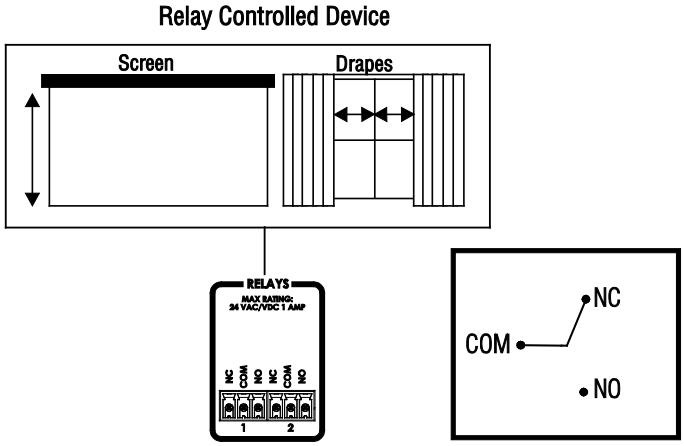
Relay Connections

The HC6's 2 relays and the HC12's 4 relays can be programmed to provide automated events such as lift operation, screen operation, and drapery control. Connections include COMMON, NORMALLY CLOSED and NORMALLY OPEN. See Figure 3-5.

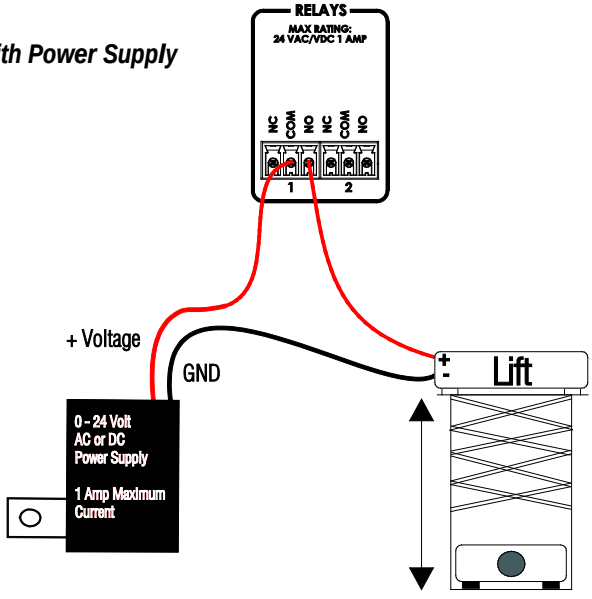
Figure 3-5: Relay Connections



If a voltage trigger is required, an external power supply can be connected to the HC6/HC12's relays as shown in Figure 3-6.

The relays are rated for a maximum of 24 Volts, AC or DC and a maximum of one amp of current. Do not connect to 120 VAC or 240 VAC house line wiring!

Figure 3-6: Relay Connections with Power Supply



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Sense Input Connections

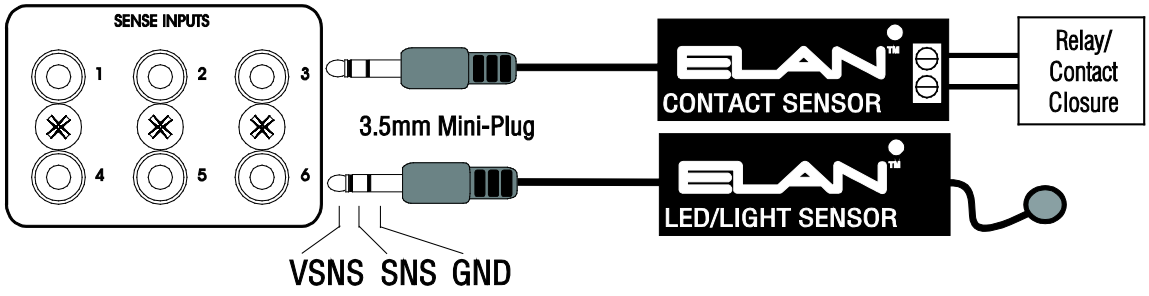
The Sense Inputs of the HC6/HC12 are used to conditionally execute macros and to trigger Event Maps that have been programmed into the System Controller using the ELAN configuration software.

When used with a conditional macro the sensor is connected to the device being monitored. The ELAN configuration software can be used to create a macro that checks the status of the sensor prior to issuing a command. This "conditional programming" can be used to prevent a TV, for example, from being inadvertently turned on or off when changing sources or turning a zone on or off.

Event Maps can be programmed that execute a command or sequence of commands when a Sense Input is triggered. For example, a driveway sensor can be used to activate an ELAN contact closure sensor to trigger an Event Map that turns on the outside lights. The status of a light sensor can be used to make the triggering of the Event Map conditional. If it is daytime the lights don't come on. If it is nighttime, they do.

The HC6/HC12 provides +5 VDC to the TIP (VSNS) connection to power the Sensor. When the Sensor is activated, it shorts the ring (SNS) to the sleeve (GND) thereby triggering the HC6/HC12's Sense Input. See Figure 3-7.

Figure 3-7: Sense Inputs



Available ELAN sensors include: AUDIO, VIDEO, CONTACT CLOSURE, and VOLTAGE, LED/LIGHT, and CURRENT/MAGNETIC FIELD sensors.

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IR Output Connections

The HC6 and HC12 have six routable 3.5mm mono IR output ports, a 3.5mm mono ALL IR output port and a DB15 IR output connection. The DB15 connection parallels the six 3.5mm mono IR ports and provides an additional six routable IR outputs.

Do not connect IR emitters to the DB15 outputs. The DB15 IR signal output is 3VDC, which will not drive an emitter.

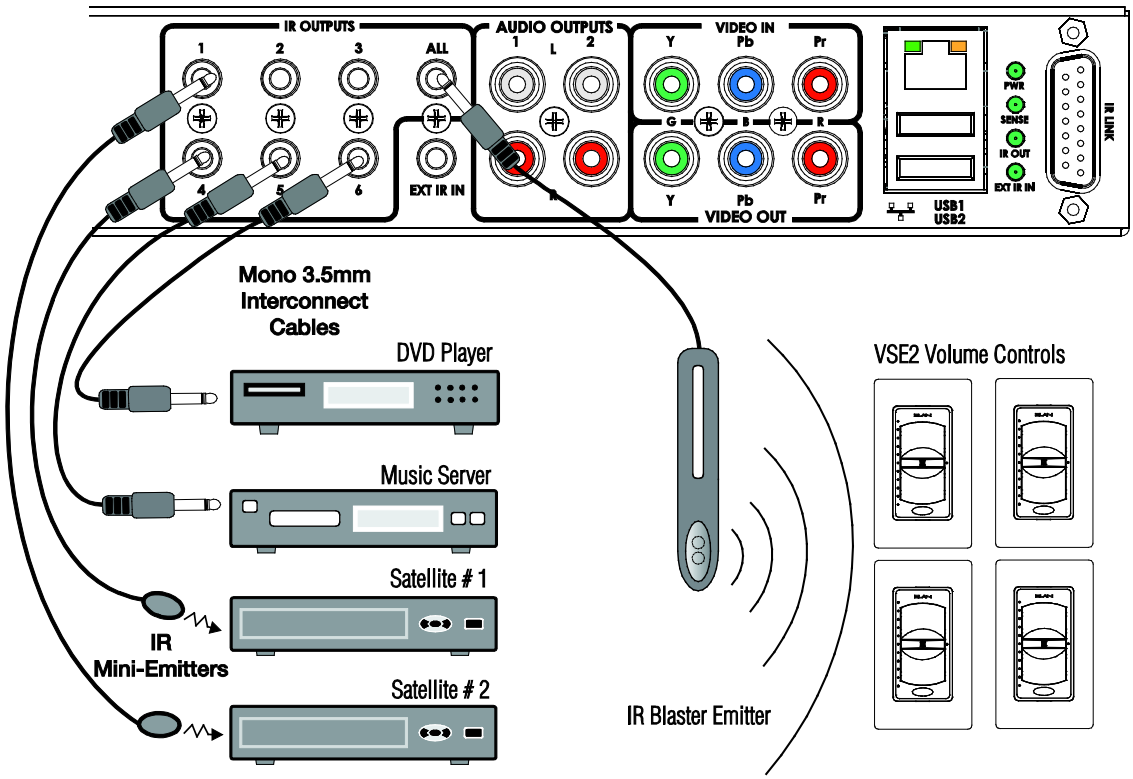
Any IR generated by the HC6 or HC12 is routed out of the ALL IR port. Use the ALL IR port when IR routing is not needed or desired, for example, when using code specific volume controls.

When used with an ELAN Multi-Room Controller like the M86A or the S128P, the DB15 IR Output connection from the HC6 or HC12 should be connected to the IR LINK of the Multi-Room Controller as shown in Figure 2-1 on page 14 of this manual.

This connection allows source IR commands to be routed from the System Controller to the Multi-Room Controller and then to IR emitters or 3.5mm cables connected to the Source IR Outputs of the Multi-Room Controller.

When used with 3rd party equipment, IR connections are made from the six 3.5mm ports and the ALL IR port to the devices to be controlled as shown in Figure 3-8.

Figure 3-8: IR Outputs



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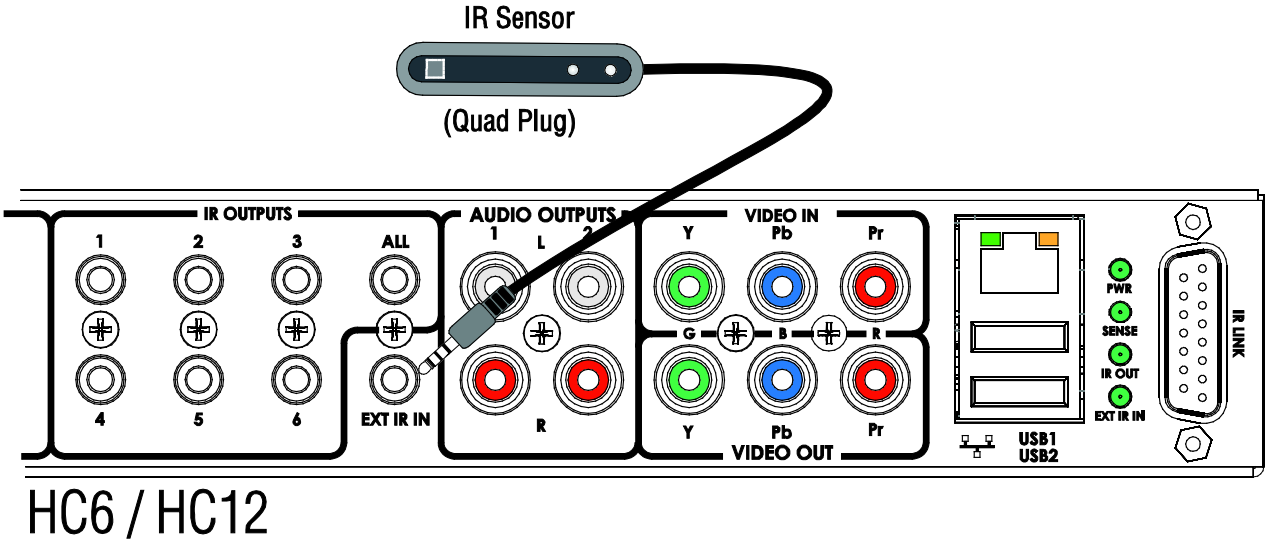
External IR Input Connection

This connection allows the HC6 and HC12 to receive IR input from a Quad plug IR receiver (as shown in Figure 3-9), from an IR sensor connected to a PPIR Precision Panel (see pages 40 and 45), or from the PPVN Precision Panel (see page 49). This provides control of the On Screen Display (OSD) from one IR receiver.

Figure 3-9: External IR Input



Note: When using the External IR Input with an IR receiver directly connected or with an IR receiver connected to a PPIR Precision panel, the 12VDC power output must be ON in the configuration software. The factory DEFAULT setting is ON.

Figure 3-10 on the following page shows incorporating additional IR receivers using Global Caché GC-IREs connected to PPIS precision panels. The GC-IREs receive IR signals from zone located TS2s connected to the PPVN precision panel and convert those signals into RS-232 data. The HC6 and HC12 use this RS-232 data to trigger Event Maps. Event Maps execute commands in response to events detected by the System Controller.

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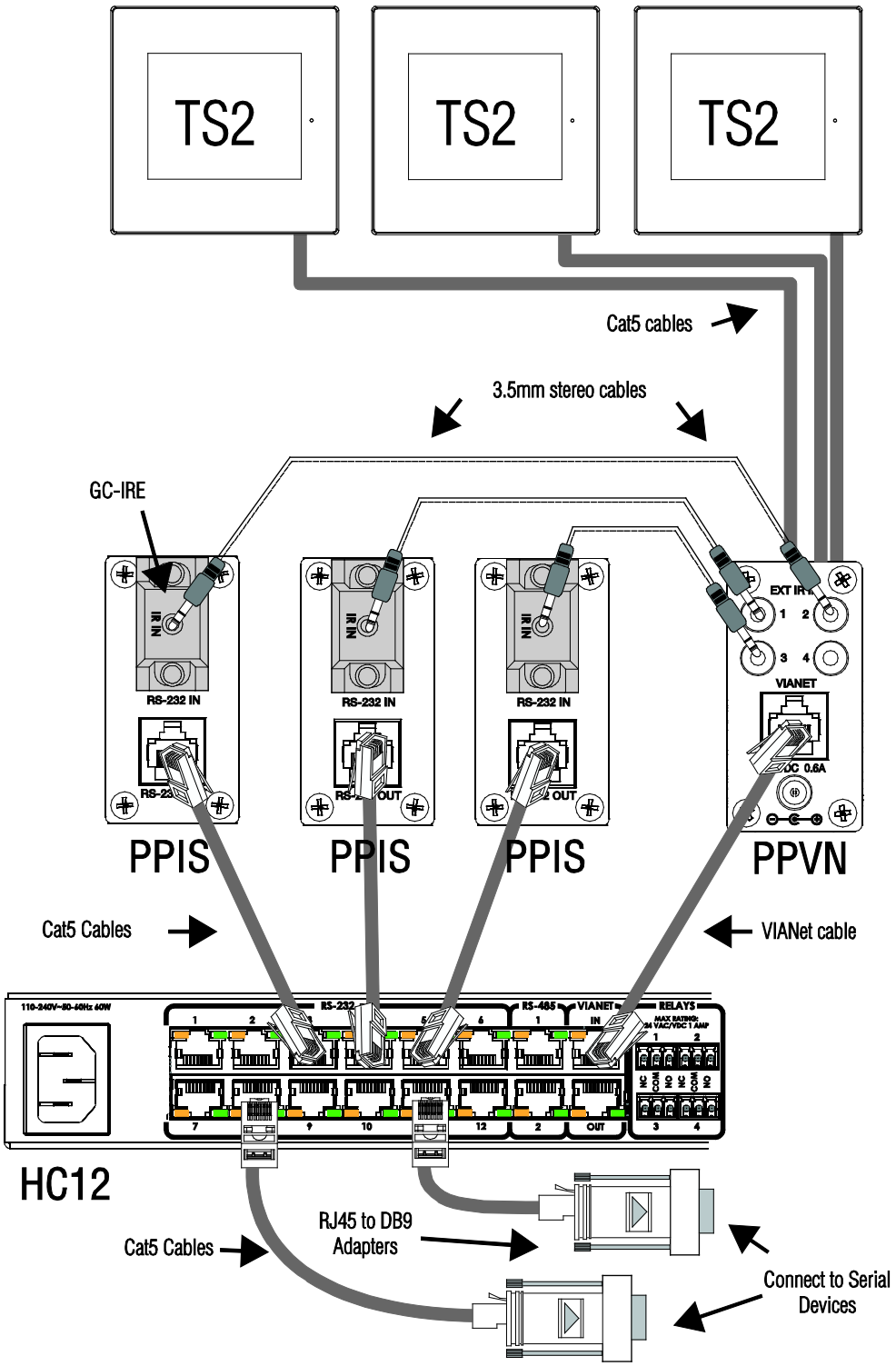
Figure 3-10: GC-IRE Integration



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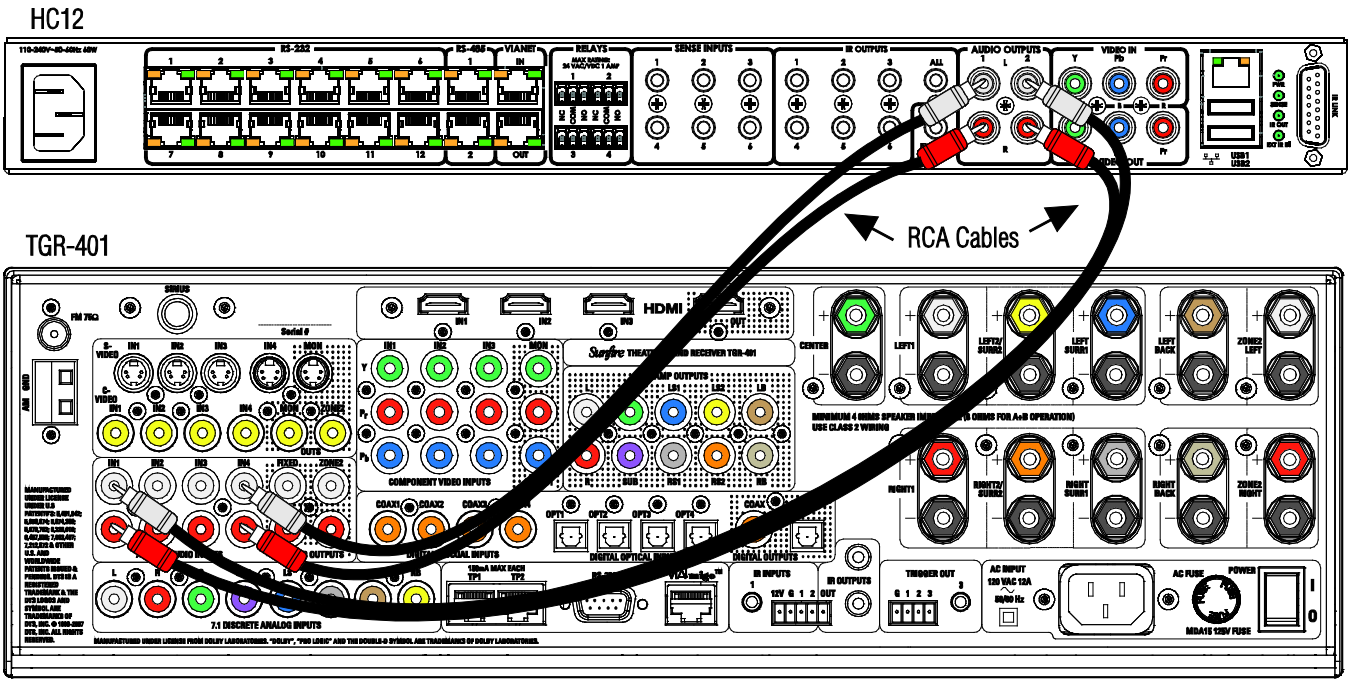
Audio Output Connections

The Internal Player's Audio Outputs connect to the Source Audio Inputs of the multi-room controller or Home Theater System just like any analog audio source.

The two outputs are independent of each other and can be treated as two sources. Connect using standard RCA cables as shown in Figure 3-11.

Figure 3-11: Audio Outputs



Internal Player Capacity

The 500GB internal hard-drive (HC12 only) can be used to store WAV and MP3 audio files for playback using the Internal Player. Depending on the compression rate of the audio files, the total storage capacity will vary. The table below provides a general guideline for storage calculation.

File Format	WAV (Uncompressed)	320kbps	256kbps	192kbps	128kbps
Capacity in Hours	756	1560	4170	5558	8338

Note: If images used for the picture viewer are also stored on this drive they will impact the total storage capacity.

Both the HC6 and HC12 can use external NAS drives for file storage.

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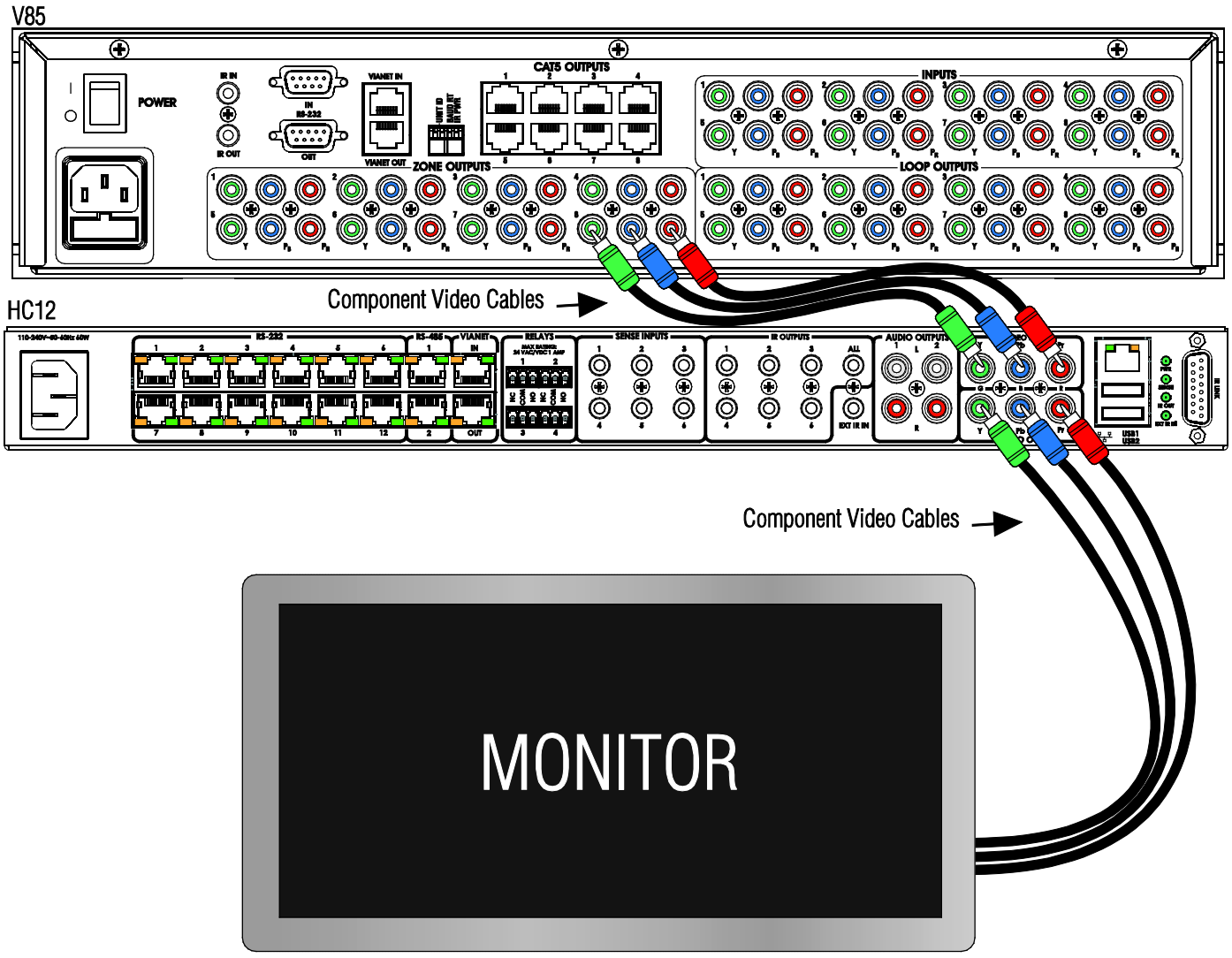
Component Video Input / Output Connections

The component video connections allow source video and the On Screen Display (OSD) of the System Controller to be displayed on a monitor using only one set of inputs. If a matrix video switcher like the V85 is being used, route one of the V85's outputs into the System Controller's video inputs and from the video outputs of the System Controller to the inputs of the monitor. This allows any component source's video to be viewed.

Figure 3-12 shows the video connections from the V85, through the HC12 and then to a monitor.

Figure 3-12: Component Video Connections



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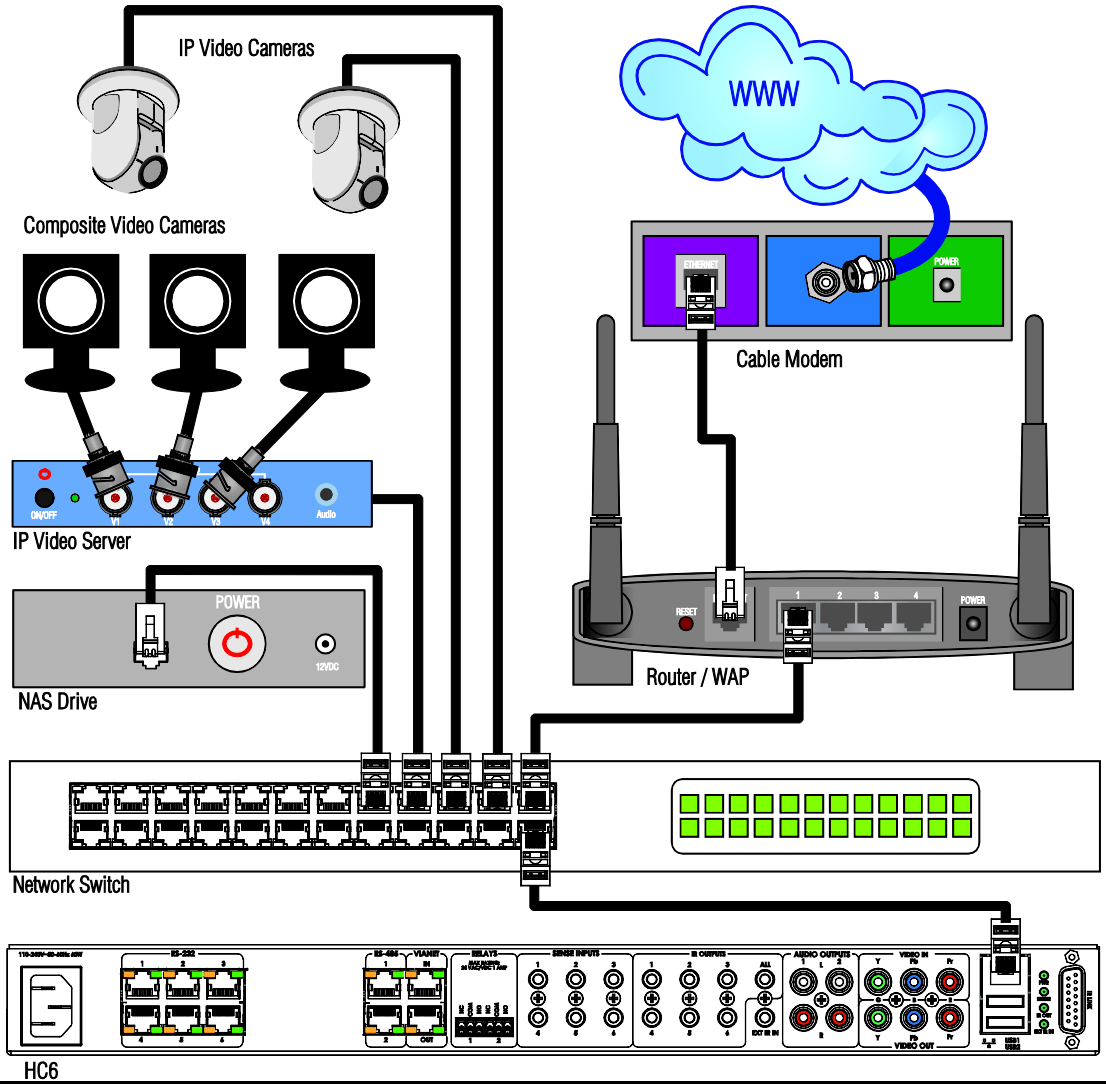
Ethernet Connections

The Ethernet connection allows the System Controller to communicate with In-Wall Touchscreens, Wireless Touchscreens, and Ethernet controlled devices, Network Attached Storage (NAS) devices and the Internet. It also allows control from a computer's Viewer interface.

The ELAN configuration programming and remote access to the System Controller is accomplished through the Ethernet connection.

The Ethernet connection may be made to a router or switch connected to a router. Typical networks connections are shown in Figure 3-13.

Figure 3-13: Network Connection



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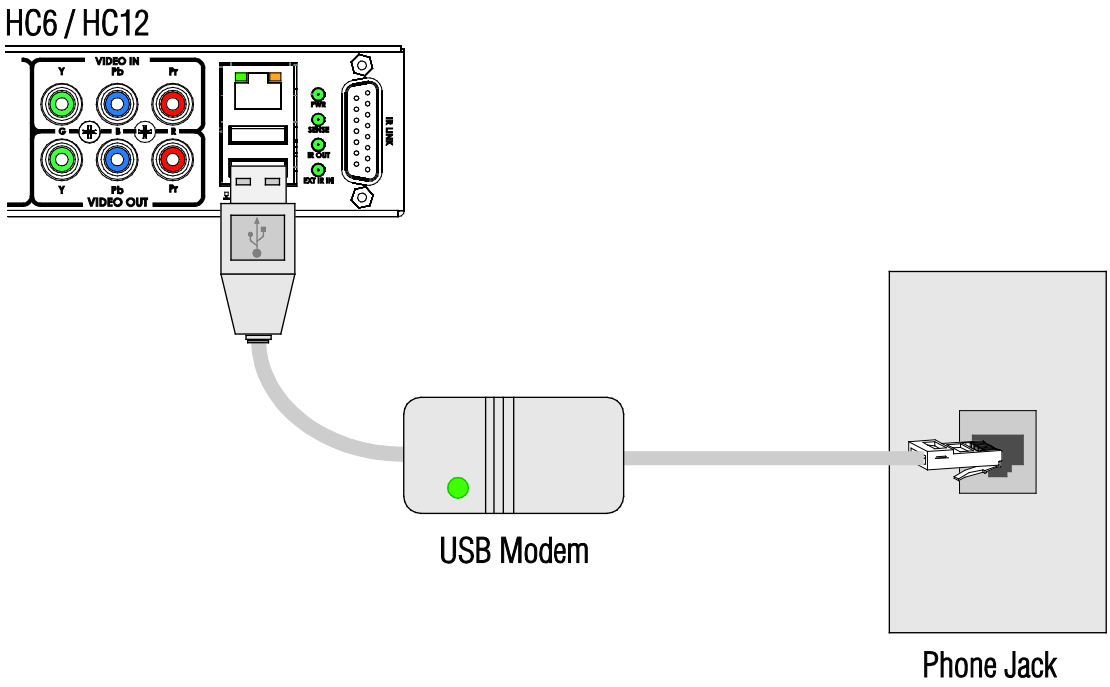
USB Connections

The USB connections allow the System Controller to connect to up to two incoming phone lines using USB modems. When the Messaging Pro App is activated, the HC6 and HC12 can function as an answering machine with up to 8 Voice Mail boxes and allow Remote Home Control and Remote Message Retrieval from any touchtone phone.

Connect the modem to the USB port on the System controller and connect to a standard telephone wall jack as shown in Figure 3-14.

See the Integration Notes at www.elanhomesystems.com/dealer for additional information.

Figure 3-14: USB Connection



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IR Link Connection

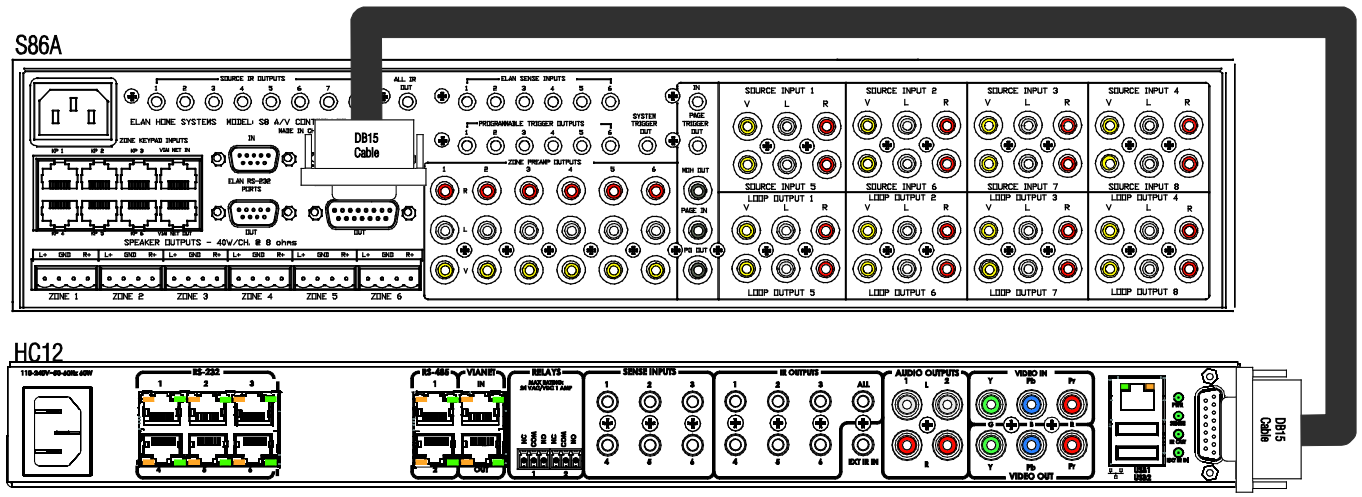
The IR Link is a DB15 connection that accommodates up to 12 IR outputs. The DB15 connection parallels the six 3.5mm mono IR ports and provides an additional six routable IR outputs.

Do not connect IR emitters to the DB15 outputs. The DB15 IR signal output is 3VDC, which will not drive an emitter.

When used with an ELAN Multi-Room Controller like the M86A or the S128P, the DB15 IR Output connection from the HC6 or HC12 should be connected to the IR LINK connection of the Multi-Room Controller as shown in Figure 3-15.

This connection allows source IR commands to be routed from the System Controller to the Multi-Room Controller and then to IR emitters or 3.5mm cables connected to the Source IR Outputs of the Multi-Room Controller.

Figure 3-15: IR Link Connection



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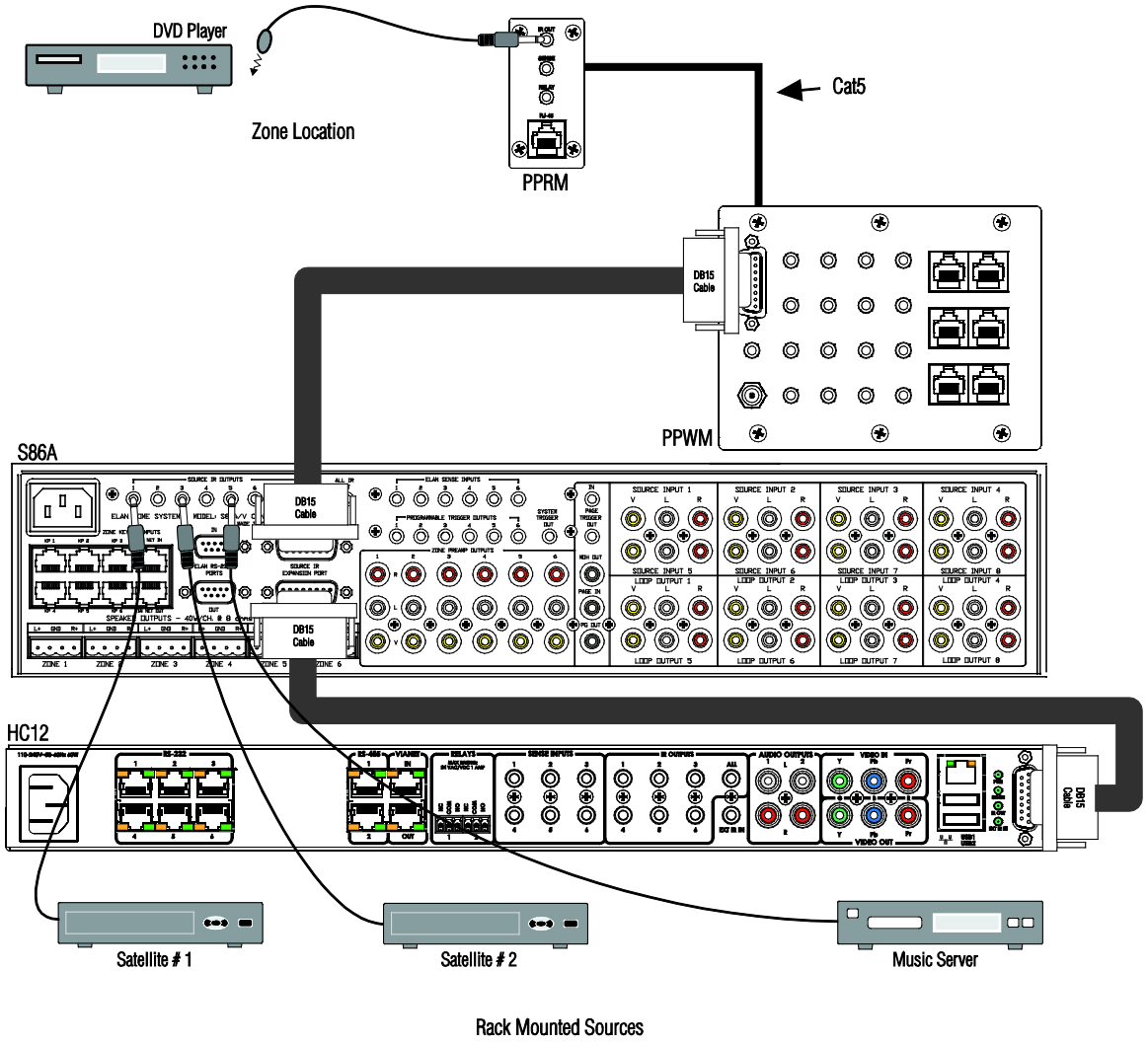
IR Link Connection Advanced Application

This application is for systems using an ELAN Multi-Zone Controller (S86A, S128P) and the PPWM Precision Panel (see page 38).

While IR emitters may be connected to the System Controller's 3.5mm IR Outputs, generally, rack mounted source IR emitters are connected directly to the IR outputs of the multi-zone controller. If the rear IR punch-downs of the PPWM are also used, (for example, to send IR to an emitter in a zone) it is necessary to "loop" the DB15 through the multi-zone controller to the PPWM's IR Link Connection. This allows source IR commands from the System Controller to be routed through the S86A and S128P to the correct source and for any IR that needs to be routed to a zone located emitter to be "passed through" to the PPWM's rear punch downs. (Fig. 3-16)

Figure 3-16: Advanced IR Link Application



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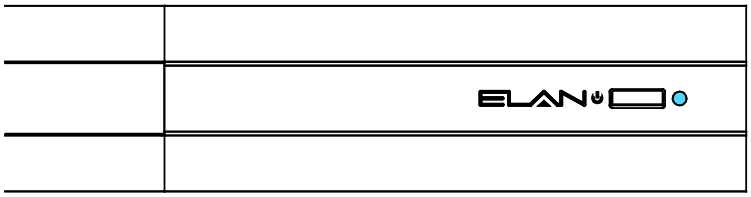
Chapter 4: Operation

Power Switch

The power switch is located on the right side of the front of the unit. The front panel LED illuminates blue when the unit has AC power and is switched on. (Fig. 4-1)

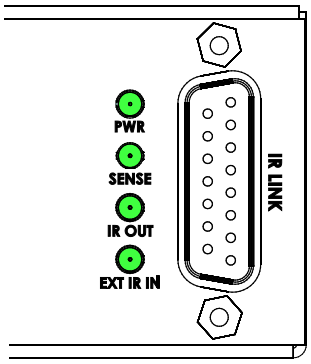
Figure 4-1: Power Switch and LED



Rear Panel LEDs

The HC6 and HC12 have 4 System Status LEDs on the rear panel that provide system information. (Fig. 4-2)

Figure 4-2: System Status LEDs



Item	Function
PWR	Illuminates when the unit has AC power.
SENSE	Illuminates when a connected sensor is active.
IR OUT	Illuminates when the System Controller is transmitting IR signals.
EXT IR IN	Illuminates when the System Controller is receiving IR signals.

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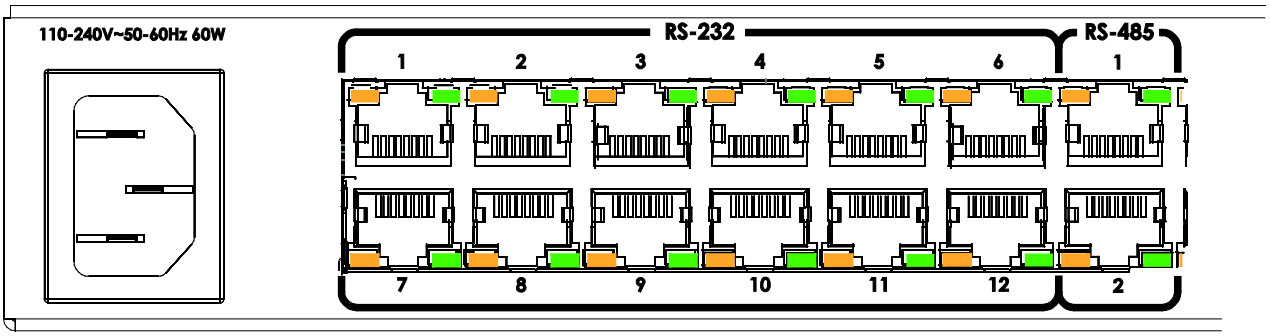
Rear Panel LEDs (Continued)

Serial Ports

Each serial port (RS-232 and RS-485) has an amber LED and a green LED that will illuminate when that port is active. The amber LED (left) illuminates when the port is transmitting data and the green LED (right) illuminates when the port is receiving data. (Fig. 4-3)

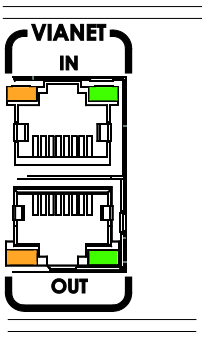
Figure 4-3: Serial Port Status LEDs



VIANet Ports

The VIANet port LEDs function the same way as the serial port LEDs. The green (right) LED indicates VIANet data is being received and the amber (left) LED indicates VIANet data is being transmitted. (Fig. 4-4) The transmit (amber) LD should always be illuminated.

Figure 4-4: VIANet Port Status LEDs



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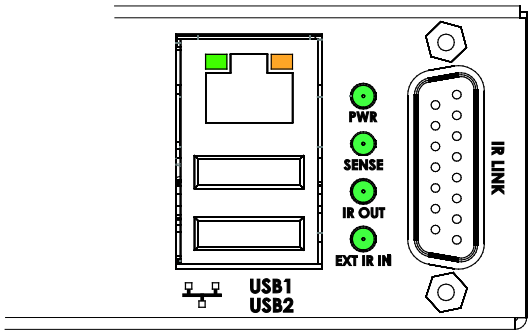
Rear Panel LEDs (Continued)

Ethernet Port

The Ethernet port has a green LED on the left and amber LED on the right. When the green LED is illuminated it indicates that the System Controller is "Linked" (physically connected) to the switch or router. The amber LED indicates Ethernet activity on the port. (Fig. 4-5)

Figure 4-5: Ethernet Port Status LEDs



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Chapter 5: Precision Panels

Precision panels provide a quick and easy way to terminate and make sense of complex wiring. The rears of the panels have neatly arranged 110 punch-downs and screw terminals to ensure reliable connections for Touchpads, Sensors, Cat5 cables, and power wires. Refer to the Quick Install Guides included with each precision panel for additional information not covered in this manual.

The precision panel front connections are identified with the names of the System Controller connections to which they go. For example, connect the "Sense Inputs" of the PPWM to the "Sense Inputs" of the System Controller.

Precision panels that are located in a zone such as the PPRM and PPIR are labeled using the same convention. The "External IR In" on the front of the PPIR precision panel indicates that the signal received by the IR receiver connected to it will be routed to the "External IR In" connection of the System Controller.

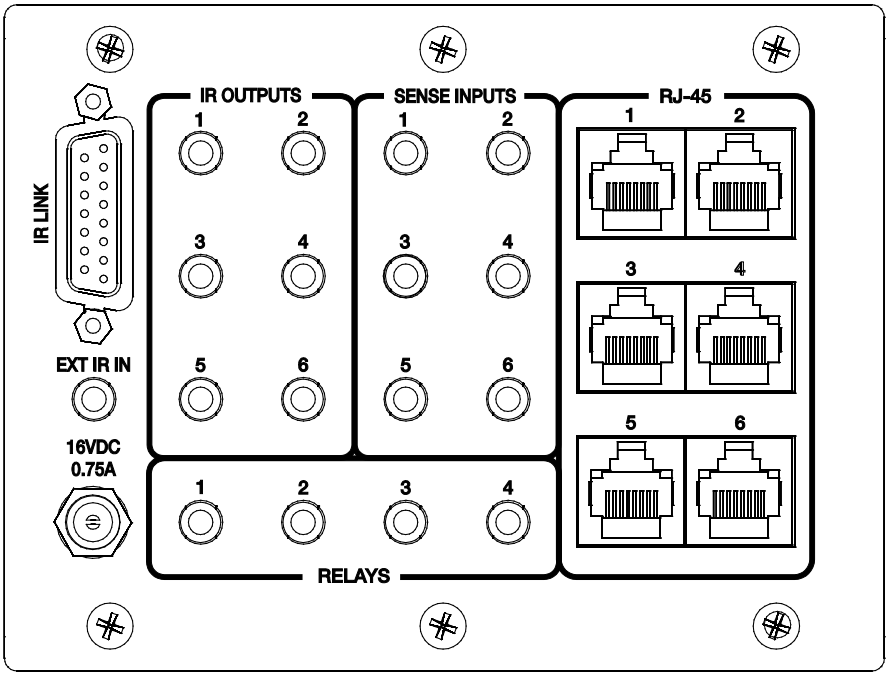
Unless otherwise noted, the maximum distance from the PPWM to the zone located precision panels is 1000'.

PPWM Precision Panel

The PPWM is a ½ frame panel that is the interface between the HC6 and HC12 System Controllers and the precision panels that are located in zone locations.

Figure 5-1 shows the PPWM connections for IR Outputs, Sense Inputs, Relays, External IR Input, Cat5 cables, the IR Link and power.

Figure 5-1: PPWM Front



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PPWM Precision Panel (Continued)

IR Link

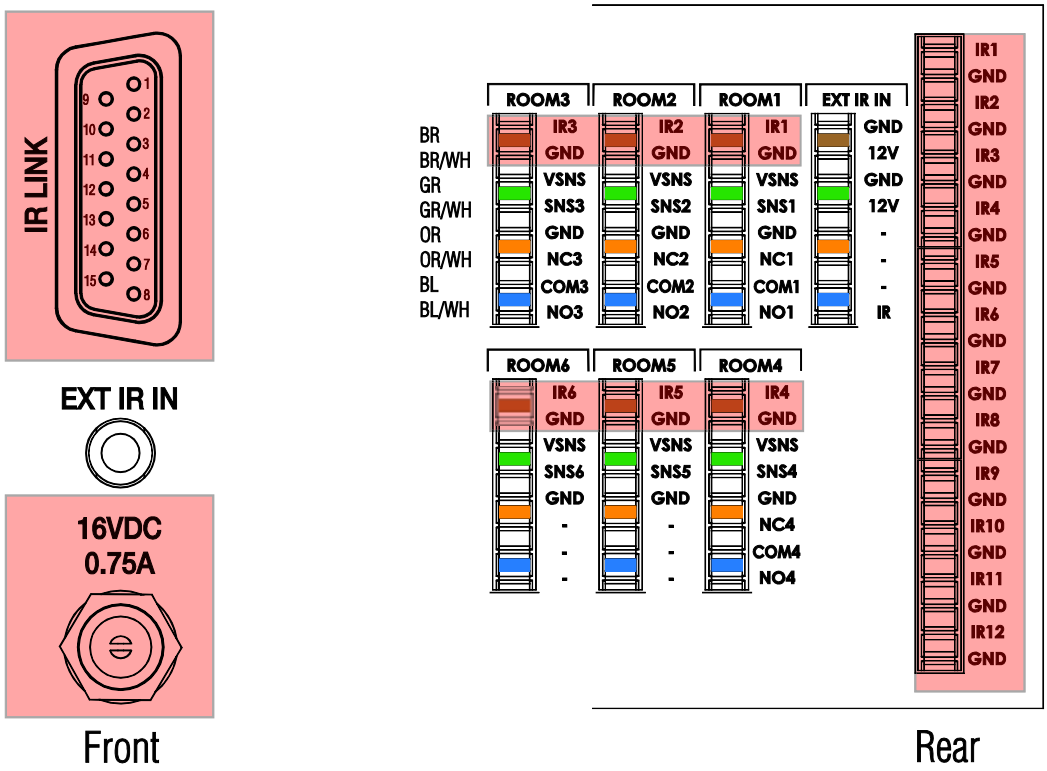
The IR Link connects to the IR Link of the System Controller using a DB15 cable. It provides connections from the HC6 or HC12 to IR controlled devices. The first six IR inputs from the IR Link and the six 3.5mm IR inputs are parallel and send IR to the first six 110 punch-downs on the rear of the PPWM. They also send IR to the "Room" punch-down IR connections. IR "1" sends IR to Room 1, IR "2" sends IR to Room 2, etc. The six additional IR connections from the IR Link are made available using 110 punch-downs # 7 through # 12 on the reverse of the PPWM. See Figure 5-2 below.

Use Cat5 to extend the IR signals to emitters connected to PPRM panels located in zones.

When using the IR Link connection for any of the first six IR outputs, DO NOT connect the 3.5mm connection for that output. This could cause unintended duplication of IR commands.

When using the IR Link connection, the 16 VDC power supply must be connected. The IR Link signal from the System Controller is 3 VDC. The power supply is required to increase the strength to 12 VDC to operate emitters.

Figure 5-2: IR Link Connection



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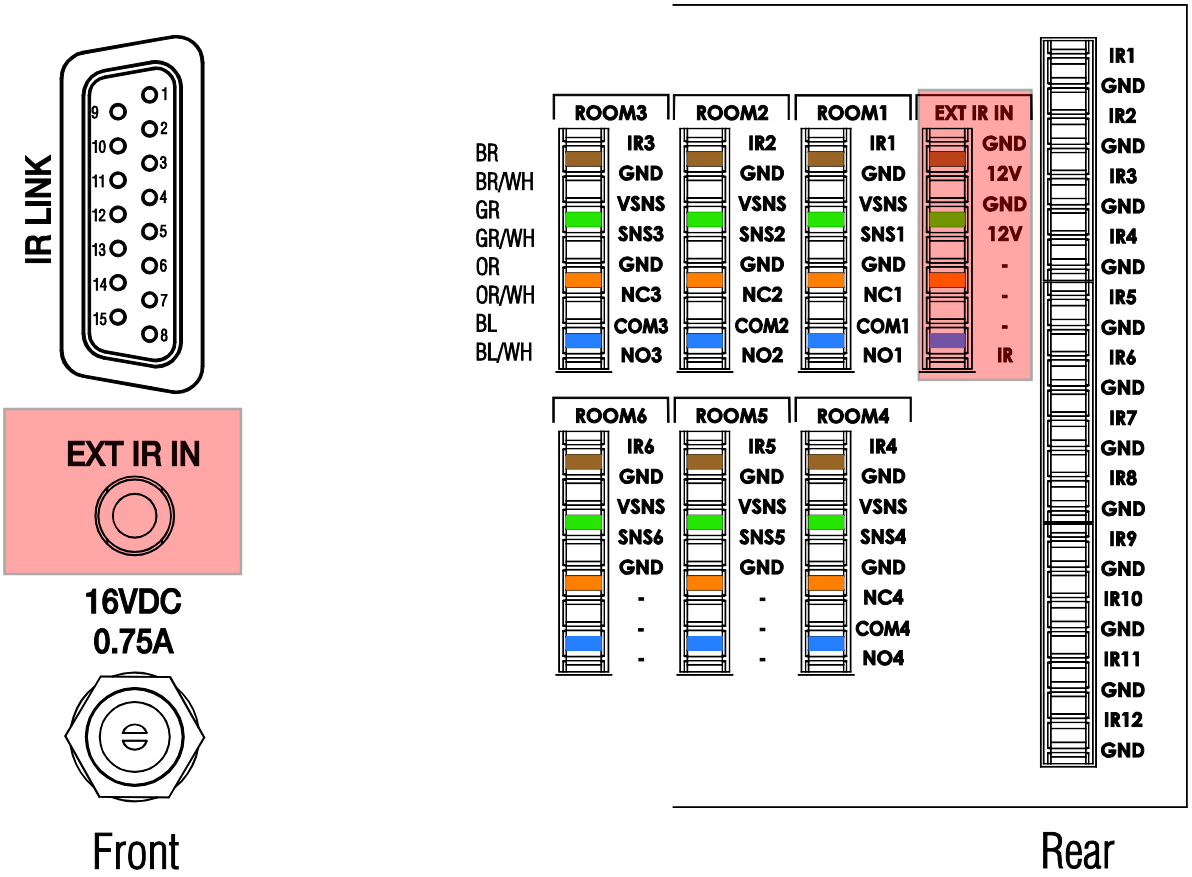
PPWM Precision Panel (Continued)

External IR In

This connection provides power, ground and IR signal path for one IR receiver located in a zone and allows IR commands to be used to trigger Event Maps. The External IR In port connects to the External IR In port of the System Controller using a stereo 3.5mm cable. See Figure 5-3 below.

If additional External IR inputs are needed, for example, from TS2s connected to a PPVN, use PPIS precision panels and GC-IREs as shown in Figure 3-10 on page 28 of this manual. The GC-IREs receive IR signals from zone located TS2s connected to the PPVN precision panel and convert those signals into RS-232 data. The HC6 and HC12 use this RS-232 data to trigger Event Maps.

Figure 5-3: External IR In



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PPWM Precision Panel (Continued)

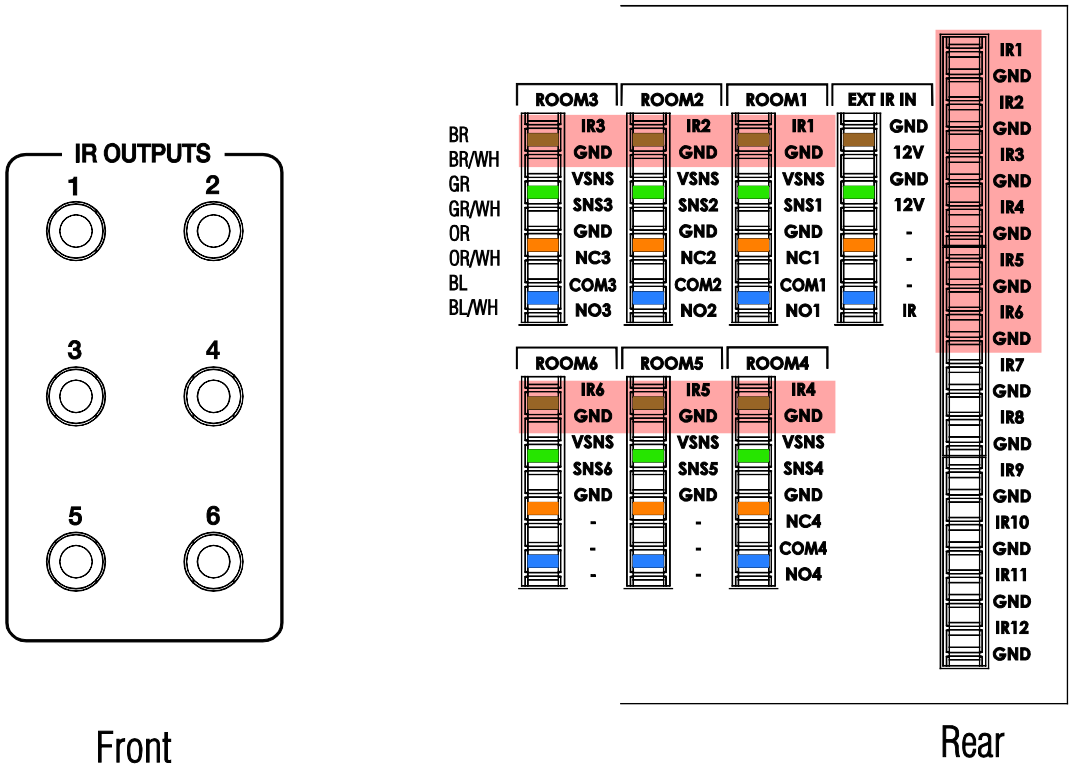
IR Outputs

These connections route IR to the first six IR punch-downs on the reverse of the PPWM and to the "Room" IR punch-downs. This allows IR to be sent to two emitters in a room. IR "1" sends IR to Room 1, IR "2" sends IR to Room 2, etc. The IR Output ports of the PPWM connect to the six IR Output ports of the System Controller using mono 3.5mm cables. See Figure 5-4 below.

Use Cat5 to extend the IR signals to emitters connected to PPRM panels located in zones.

When using the 3.5mm connections, DO NOT connect the IR Link connection. This could cause unintended duplication of IR commands.

Figure 5-4: 3.5mm IR Connections



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PPWM Precision Panel (Continued)

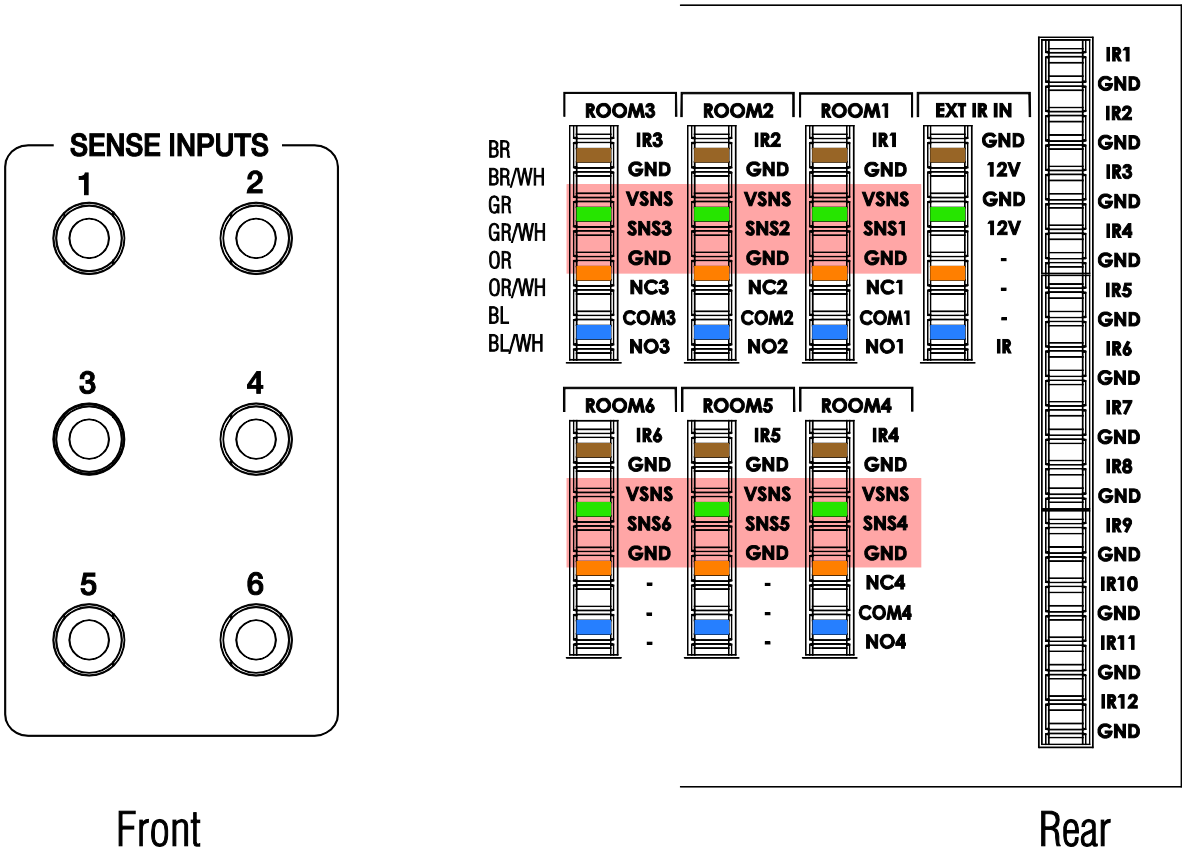
Sense Inputs

The Sense Inputs of the HC6/HC12 are used to conditionally execute macros and to trigger Event Maps that have been programmed into the System Controller using the ELAN configuration software. The Sense Input ports of the PPWM connect to the Sense Input ports of the System Controller using stereo 3.5mm cables.

Each of the six "Room" punch-downs on the reverse of the PPWM provides a connection point for remotely located sensors. See Figure 5-5 below.

Use Cat5 to connect to sensors plugged into PPRM panels located in zones.

Figure 5-5: Sense Input Connections



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PPWM Precision Panel (Continued)

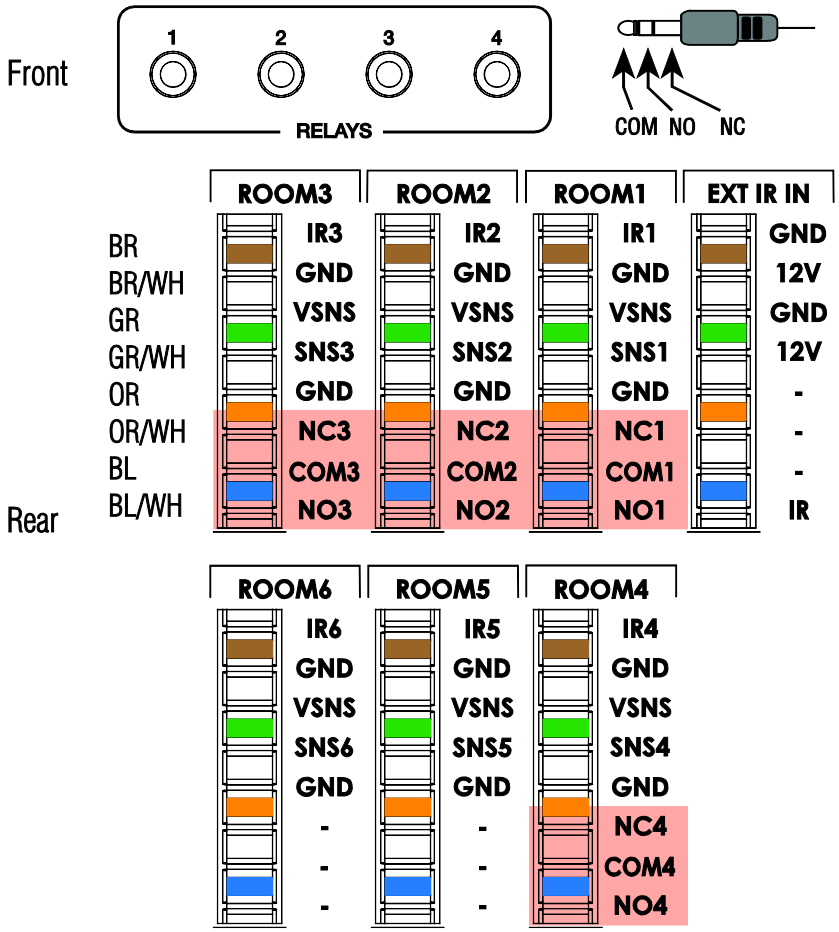
Relay Connections

The HC6's 2 relays and the HC12's 4 relays can be programmed to provide automated events such as lift operation, screen operation, and drapery control. Connections include COMMON, NORMALLY CLOSED and NORMALLY OPEN. If a voltage trigger is required, an external power supply can be connected (as shown on page 24) to the HC6/HC12's relays.

The Relay ports of the PPWM connect to the Relay ports of the System Controller using stereo 3.5mm cables. Use Cat5 to connect to sensors plugged into PPRM panels located in zones.

Note: Only "Room" punch-downs 1-4 have connections for relays. This should be kept in mind when designing the system. See Figure 5-6 below.

Figure 5-6: Relay Connections



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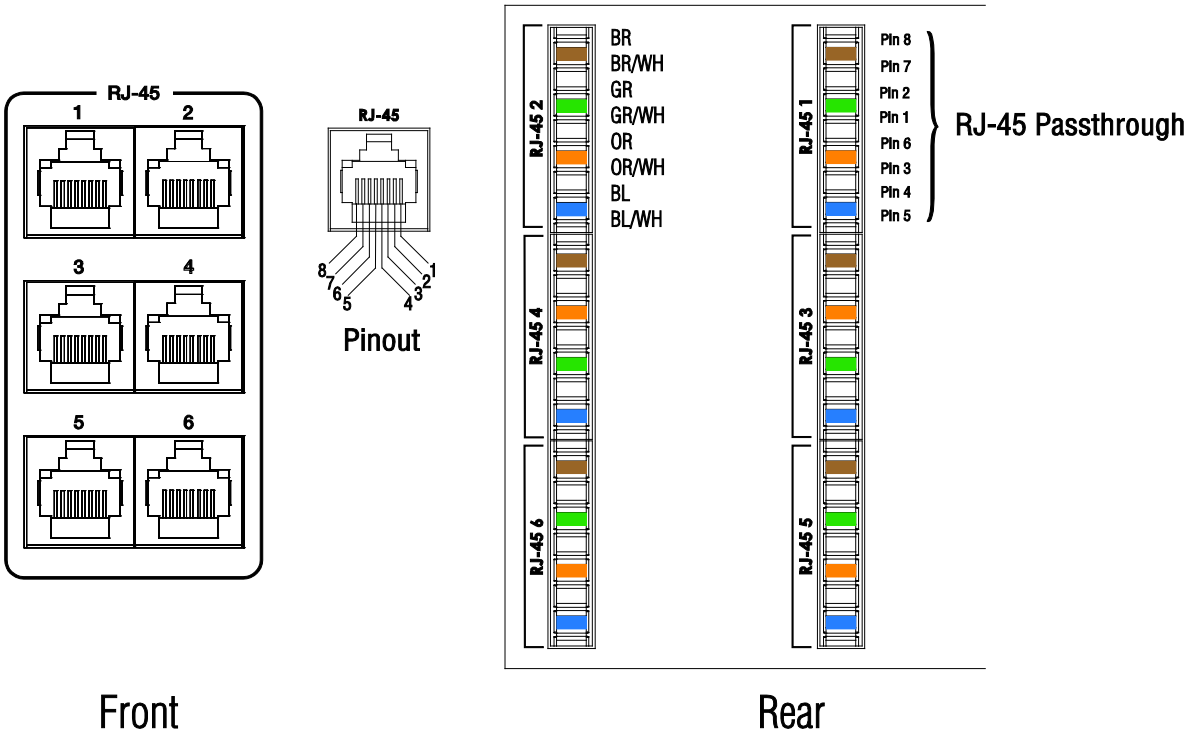
PPWM Precision Panel (Continued)

RJ-45 Connections

The PPWM's RJ45 jacks are multi-purpose connection points. Use a Cat5 jumper to an RS-232 port on the System Controller for connection to zone located PPRMs or PPIRs punched down to the rear of the PPWM. The RJ-45 may also be used as a standard Ethernet connection or other pass-through as needed. Figure 5-7 shows the RJ-45 pinout and pass-through configuration. Note that this is the TIA/EIA 568A standard.

Figure 5-7: RJ-45 Connections



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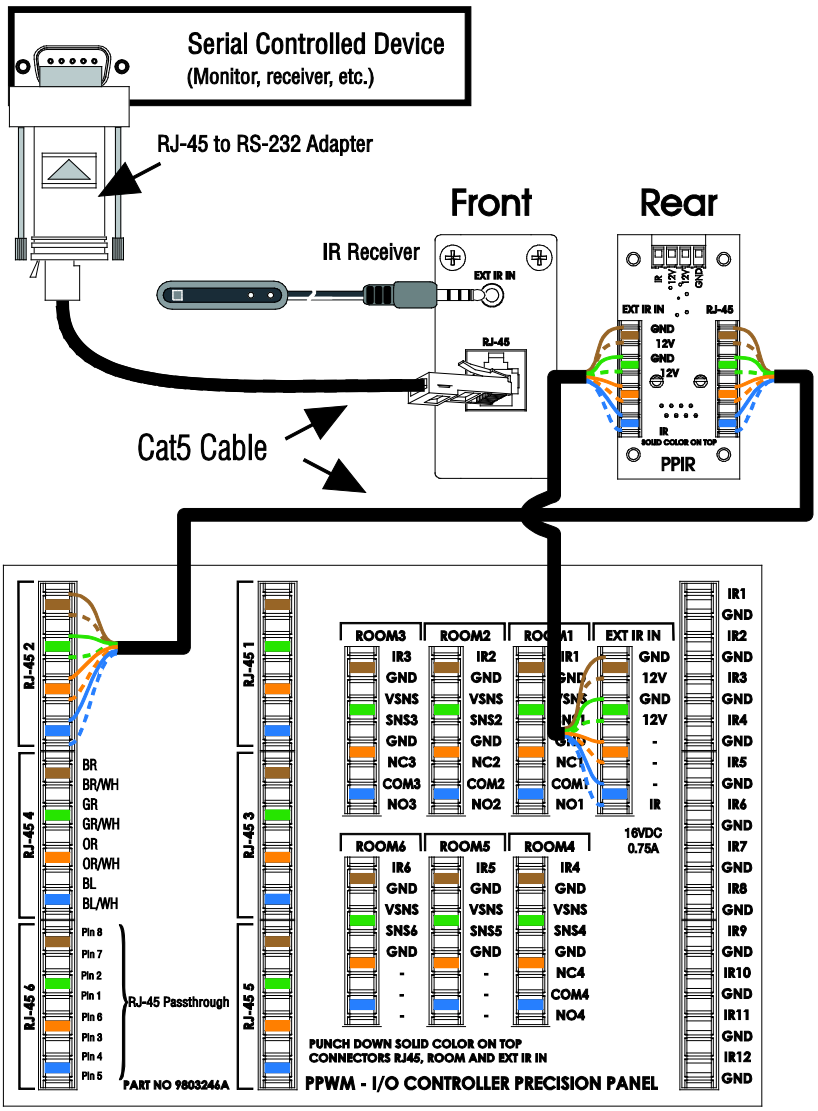
PPIR Precision Panel

The PPIR provides a connection point for IR receivers located in a zone. The RJ-45 connection can be used for zone located serial controlled devices, a network connection, or other pass-through as needed.

Use Cat5 to connect the “Ext IR IN” punch-down on the rear of the PPIR to the EXT IR IN connection on the reverse of the PPWM. Use Cat5 from the “RJ-45” punch-down of the PPIR to an RJ-45 connection on the reverse of the PPWM. See Figure 5-8.

Optionally, a PPIR may be connected to a PPVN located at the head end as shown in Figure 5-12 on page 49.

Figure 5-8: PPIR Connection



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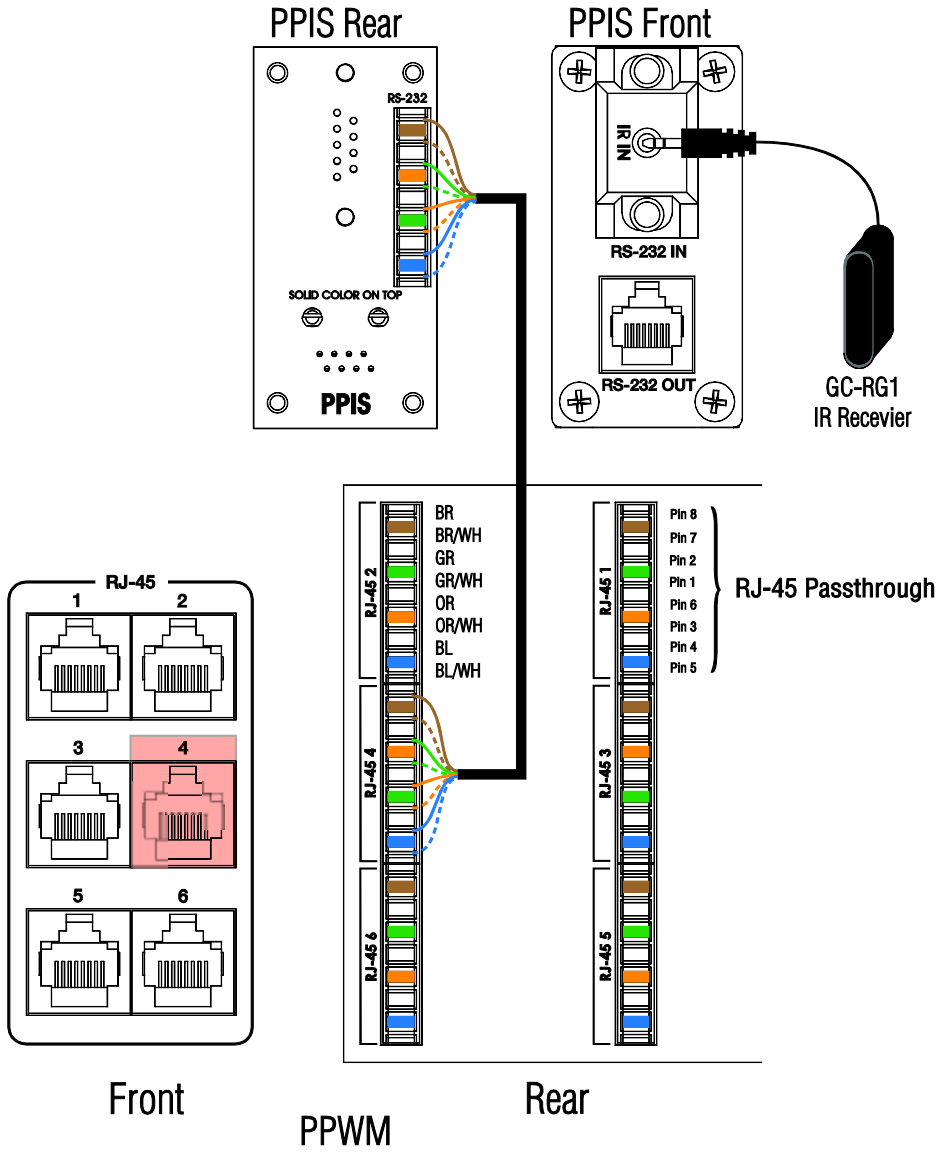
PPIS Precision Panel

The PPIS panel is the connection point for the Global Caché GC-IRE. The GC-IRE converts IR data into RS-232 data. The System Controller uses this RS-232 data to trigger Event Maps. The PPIS can be located at the Head-end so the GC-IRE can receive IR from TS2s connected to the PPVN as shown in Figure 3-10 on page 28 of this manual. Optionally, a **Global Caché GC-RG1** IR receiver **(not sold by ELAN)** can be connected to a PPIS located in a room if desired. Connect a Cat5 from the PPIS to the PPWM's RJ-45 pass-through. Use a Cat5 jumper from the front of the PPWM to an RS-232 port on the System Controller to complete the connection. **(Maximum wire run from the System Controller to the PPIS cannot exceed 50'.)** Figure 5-9 shows the connection from the PPIS to the # 4 RJ-45 port of the PPWM. If the PPWM is not being used, the rear connections of the PPIS may be connected directly to the HC6/HC12 Comm port.

Figure 5-9: PPIS Connection



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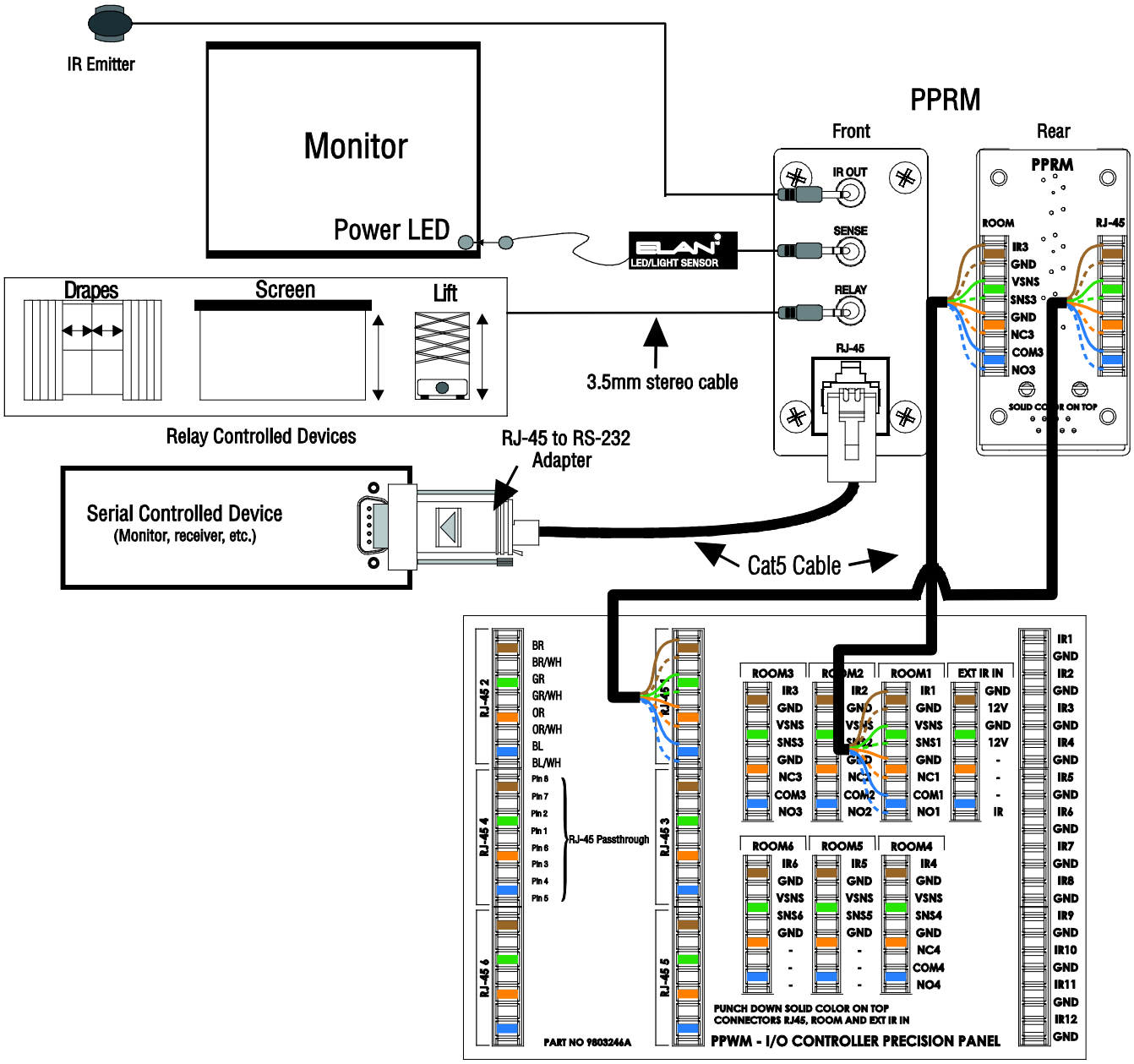
PPRM Precision Panel

The PPRM provides connections for IR output, Sense input, Relay output and an RJ-45 connection that may be used for RS-232 controlled devices or as an Ethernet jack. Figure 5-10 shows a typical application and connections from the PPRM to the PPWM.

Figure 5-10: PPRM Connections



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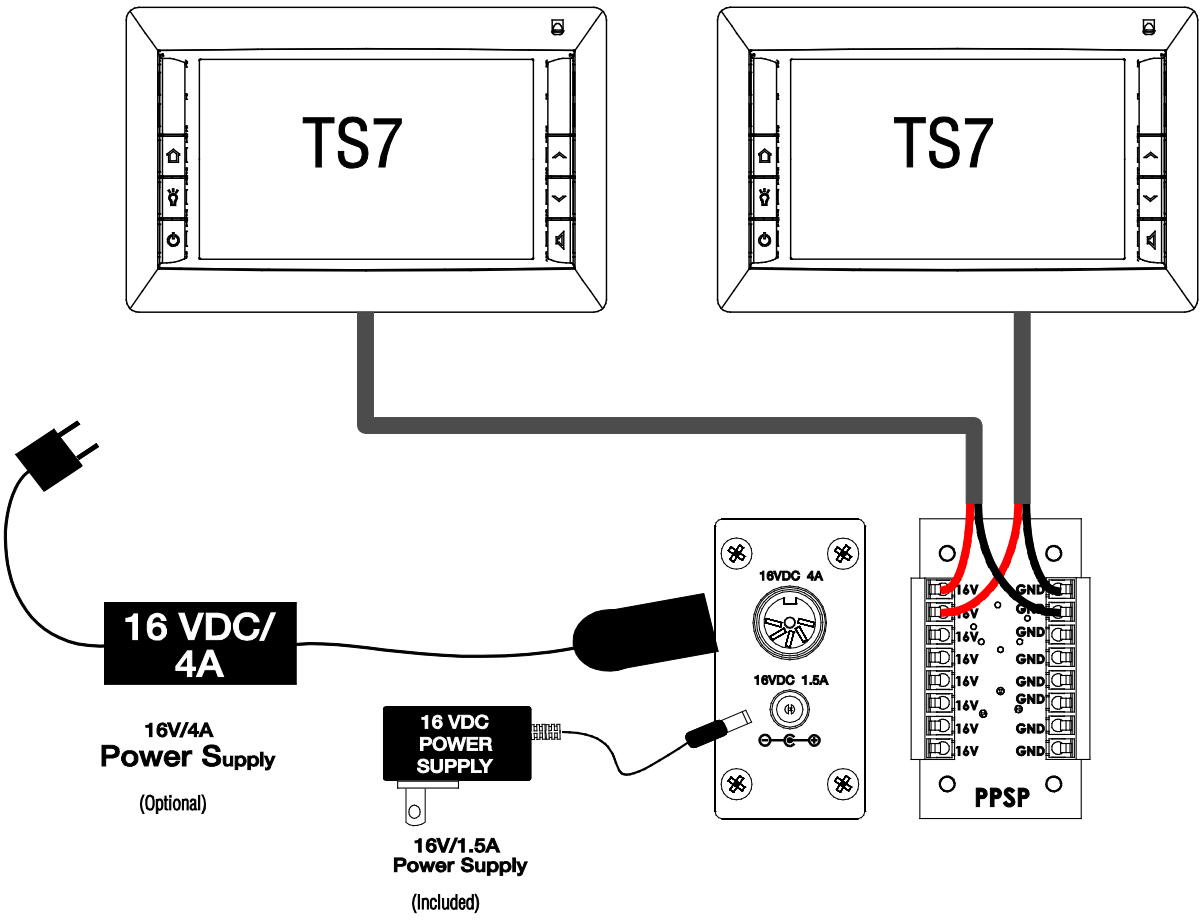
PPSP Precision Panel

The PPSP provides DC power distribution for up to 8 in-wall panels. Use the included 16VDC, 1.5 amp power supply for up to 3 TS7 panels. A 16VDC, 4 amp power supply is available when 4-8 TS7s will be connected to one PPSP. The PPSP screw down terminals accommodate up to 16 gauge wire.

Figure 5-11 shows the connections required.

DO NOT CONNECT BOTH POWER SUPPLIES AT THE SAME TIME.

Figure 5-11: PPSP Connections



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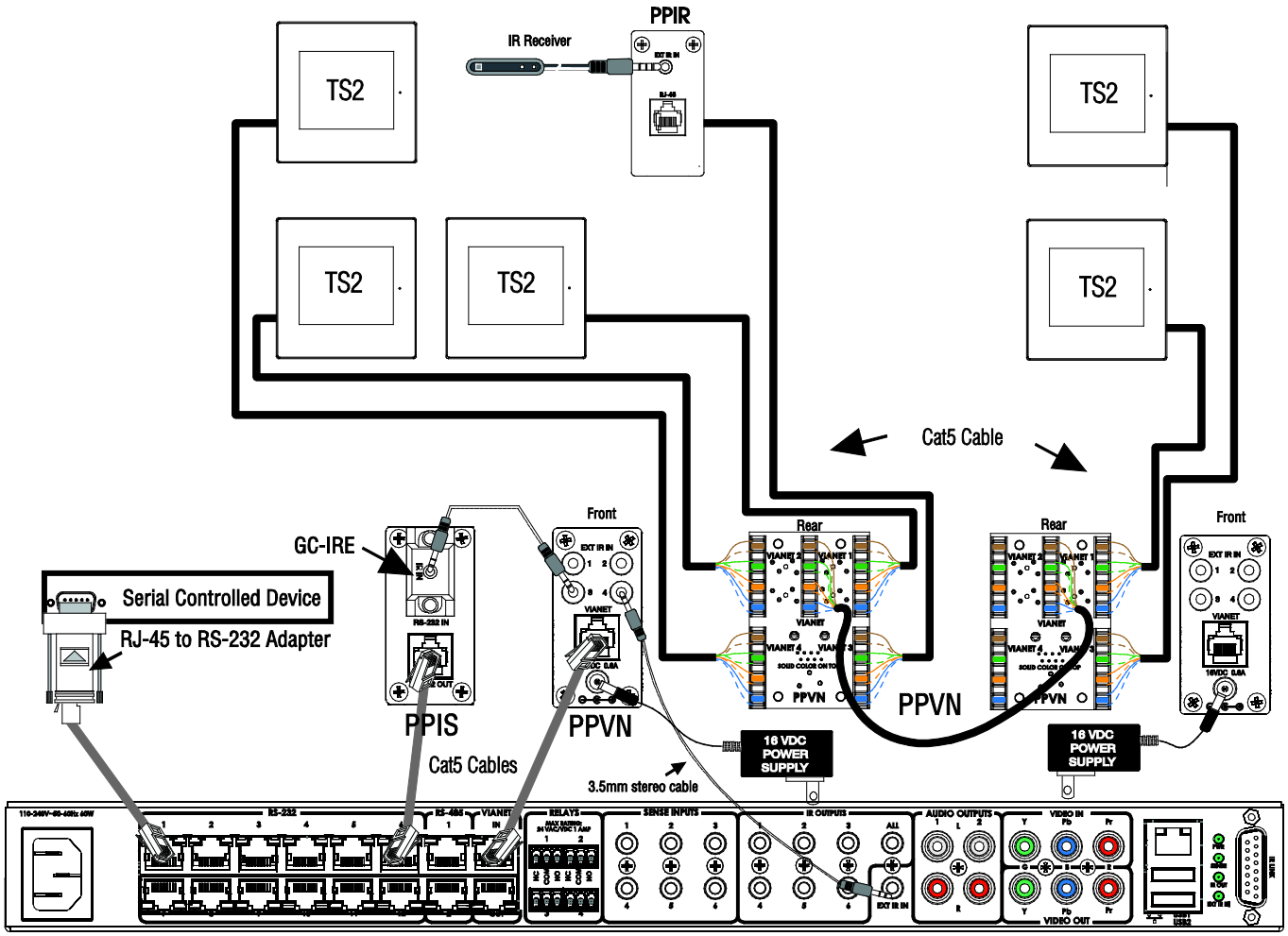
PPVN Precision Panel

The PPVN is used to connect TS2 touch pads and/or PPIR Precision Panels to the System Controller. The PPVN provides power, VIANet connections and IR input for the TS2s and power and IR connections for the PPIR panels. Each PPVN has 110 punch-downs for up to 4 TS2s and/or PPIRs and comes with a 16VDC, 1.5 amp power supply. If multiple PPVNs are being installed, use Cat5 to link the VIANet punch-downs together. Figure 5-12 shows the connections required.

Note that the IR received by the IR receiver connected to the # 3 connection is being converted to RS-232 data by the GC-IRE and the IR received by the TS2 connected to the # 4 connection is going to the EXT IR IN port of the HC8.

Each PPVN requires a separate power supply.

Figure 5-12: PPVN Connections



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Chapter 6: Troubleshooting

General

Symptom	*Possible Cause*	*Solution*
HC6/HC12 will not power up.	1. Power cable disconnected 2. Power switch is off 3. Circuit breaker tripped	1. Connect power cable 2. Turn power on 3. Reset circuit breaker

Serial Devices

Symptom	*Possible Cause*	*Solution*
No control of serial device.	1. Faulty wiring / incorrect DB9 to RJ 45 adapter 2. Device connected to incorrect port 3. Incorrect driver loaded in the configuration software 4. Device not powered 5. Serial port settings incorrect on device 6. Serial port settings incorrect in dealer created one-way driver 7. Serial cable too long 8. Device requires full hand-shaking	1. Correct wiring / use correct DB-9 to RJ-45 adapter **(See the Integration Notes for the device.)** 2. Connect to correct port – verify port in the configuration software. 3. Select correct driver in the configuration software 4. Power the device 5. Correct port settings (baud rate, stop bits, etc.) of the device **(See the Integration Notes)** 6. Correct port settings (baud rate, stop bits, etc.) of the driver, see device manual for correct settings 7. Verify cable length, move equipment, use RS-232 to RS-485 adapters 8. Device must be on Comm port 1 or Comm port 2.
Control of device but no feedback	1. Faulty wiring on RECEIVE pins 2. Serial cable too long 3. Incorrect driver	1. Correct wiring – verify RECEIVE using Comm port LEDs **(See Page 36 for LED function)** 2. Verify cable length, move equipment, use RS-232 to RS-485 adapters 3. Correct driver
Feedback from device but no control	1. Faulty wiring on TRANSMIT pins 2. Serial control not enabled on device 3. Serial cable too long 4. Incorrect / No Password (on Security Systems)	1. Correct wiring – verify transmitting using Comm port LEDs. **(See Page 36 for LED function)** 2. Enable serial control. 3. Verify cable length, move equipment, use RS-232 to RS-485 adapters 4. Use correct password
Verify Serial activity using the Serial port LEDS. See page 36 for information.		

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VIANet

Symptom	*Possible Cause*	*Solution*
No VIANet Communication with or Control of VIANet Device	1. Faulty wiring / Incorrect pinout	1. Verify wiring / correct pinout **(See page 23 for VIANet color code.)**
	2. Device VIANet Unit ID incorrect	2. Verify VIANet unit ID settings.
	3. Device not powered	3. Power the device
	4. Incorrect VIANet commands programmed	4. Correct programming
Verify VIANet activity using the VIANet port LEDS. See page 36 for information.		

Relays

Symptom	*Possible Cause*	*Solution*
Relay controls not working	1. Faulty wiring	1. Correct wiring. Use same color code for COM, NO and NC terminations at both ends.
	2. Connected to incorrect relay	2. Connect to correct relay
	3. Incorrect relay programmed	3. Correct programming
	4. Event Map programming incorrect	4. Correct Event Map programming
	5. Sense Input Trigger not working	5. Verify Sensor operation / use correct Sensor
	6. Sensor connected to incorrect input	6. Connect to correct Sensor input.
	7. Relay controlled device not functioning / not powered.	7. Verify operation of relay controlled device / power device

Sense Inputs

Symptom	*Possible Cause*	*Solution*
Event Maps / Conditionals not working properly	1. Faulty wiring	1. Verify wiring **(See page 25 for pinout)**
	2. Sensor connected to incorrect Sense Input	2. Connect to correct Sense Input
	3. Event Map / Conditional programmed to incorrect Sense Input	3. Correct Event Map / Conditional programming
	4. Sensor not being activated	4. Verify Sensor operation (See sensor manual)
	5. Incorrect Sensor for the application	5. Use correct Sensor
Verify Sense Input activity using the Sense Input Status LED. See page 35 for information.		

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IR Operation

Symptom	*Possible Cause*	*Solution*
IR controlled devices not responding	1. Faulty wiring 2. Faulty emitter 3. Incorrect commands 4. IR emitter or cable connected to incorrect IR port 5. Incorrect IR port programmed 6. IR device not functioning / not powered 7. IR interference or flooding	1. Verify / correct wiring – TIP = IR Signal, SLEEVE = GND 2. Verify emitter functionality, replace emitter 3. Correct programming 4. Connect to correct port 5. Correct programming 6. Verify device operation with original remote / power device 7. Correct interference / flooding (Plasma and LED TVs are a common source of flooding)
IR output from PPWM punch-downs not working	1. IR Link cable not connected 2. Faulty wiring / punch-downs 3. PPWM power supply faulty or not connected	1. Connect IR Link cable 2. Correct wiring / punch-downs 3. Verify / connect power supply
External IR Input triggered Event Maps not working	1. Incorrect IR receiver plug preventing IR reception by the System Controller 2. Incorrect wiring from remotely located IR receiver to System Controller 3. Remote not transmitting IR 4. Event Map programming incorrect 5. EXT IR Input Power not enabled	1. Use a “Quad” plug IR receiver 2. Correct wiring 3. Verify remote operation 4. Correct Event Map programming 5. Enable power in the configuration software
Verify IR activity using the IR Activity Status LEDs. See page 35 for information.		

Audio Outputs

Symptom	*Possible Cause*	*Solution*
No Audio Out from Internal Player	1. Faulty RCA cables 2. Incorrect Source Input Selected 3. Audio Out from System Controller connected to incorrect Source Inputs 4. Internal Player has no track playing 5. Problem with NAS device	1. Verify / Correct RCA cables 2. Select correct Source Input 3. Connect to correct Source Inputs 4. Select track, press “Play” 5. Troubleshoot NAS device

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Video

Symptom	*Possible Cause*	*Solution*
No On Screen Display (OSD) or Source Video	1. Faulty video output cables 2. Component Video Out from System Controller not connected to monitor 3. Incorrect monitor input selected	1. Verify / replace video output cables 2. Connect Video Out 3. Select correct monitor input
OSD displays but no Source Video	1. Faulty video input cables 2. Source device not functioning / not powered 3. Matrix switcher not functioning / not powered	1. Verify / replace video input cables 2. Verify source device operation / power device 3. Verify switcher operation / power switcher
OSD displays but Source Video is incorrect	1. Source Video is connected to incorrect input of matrix switcher 2. Incorrect Video output of matrix switcher connected to Video Input of System Controller	1. Connect Source Video to correct input of matrix switcher 2. Connect correct output of matrix switcher to Video Input of System Controller

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Ethernet

Symptom	*Possible Cause*	*Solution*
System Controller DOES NOT show in g! ConnectPro	1. Unit not powered or is turned off 2. Ethernet connection not connected 3. Computer and System Controller are on different networks 4. Router / switch not functioning properly / not powered 5. Computer's Wi-Fi connection faulty 6. IP conflict with another device on the network	1. Verify power, turn on 2. Connect Ethernet port to switch / router, etc. 3. Connect to same network 4. Verify router, switch functionality / power router, switch 5. Correct connection, use hard-wired connection 6. Correct IP settings **(Do not have the same IP address on another device on the network. See Appendix A for IP configuration information.)**
System Controller DOES show in g! ConnectPro but can't be accessed	1. Password not entered / Incorrect password 2. Computer / Network Firewall is blocking connection 3. Computer and System Controller are on different sub-nets	1. Enter password / use correct password 2. Temporarily disable firewall / create an exception in the firewall settings **(Contact Network Administrator)** 3. Correct sub-net connections / programming
System functions properly but can't be accessed from outside the local network	1. Incorrect System Name / Password 2. Router's port forwarding settings incorrect. 3. No Internet connection 4. Not resolving DNS	1. Verify System Name / Password 2. Correct port forwarding settings (**See Appendix A for port settings.)** 3. Verify / correct network settings and Ethernet connections 4. Verify DNS settings with Internet Service Provider
System unable to connect to the World Wide Web	Incorrect Default Gateway or DNS Server information in g! ConnectPro configuration software	Use correct Default Gateway and DNS Server information.
Verify Ethernet activity using the Ethernet Activity Status LED. See page 37 for information.		

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Appendix A: Network Information

IP Configuration

The HC6 and HC12 System Controllers come from the factory as DHCP clients. We recommend changing the IP address to a dedicated static address **outside** of the DHCP range of your network. This is done from the g! ConnectPro log-in screen as shown in Figure A-1, or from the g! ConnectPro System Tab using the "Config IP Info" button on as shown in Figure A-2.

Figure A-1: IP Configuration from the Log-in Screen

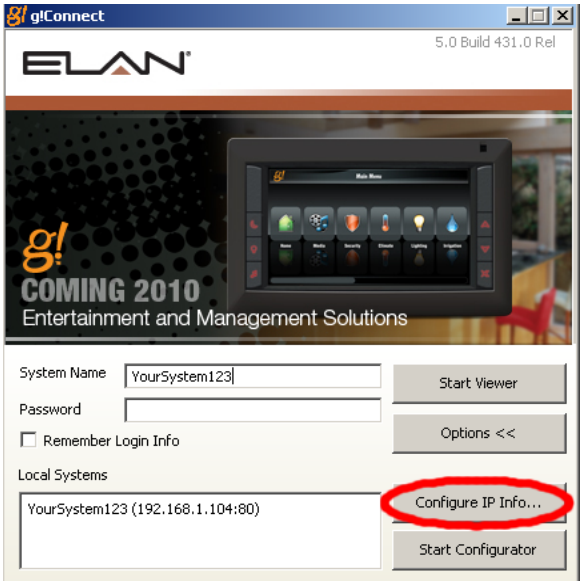
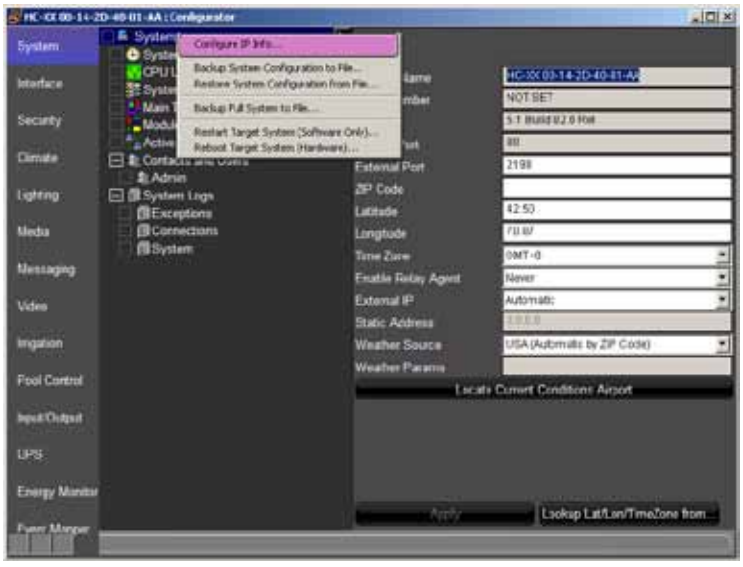


Figure A-2: IP Configuration from the System Tab



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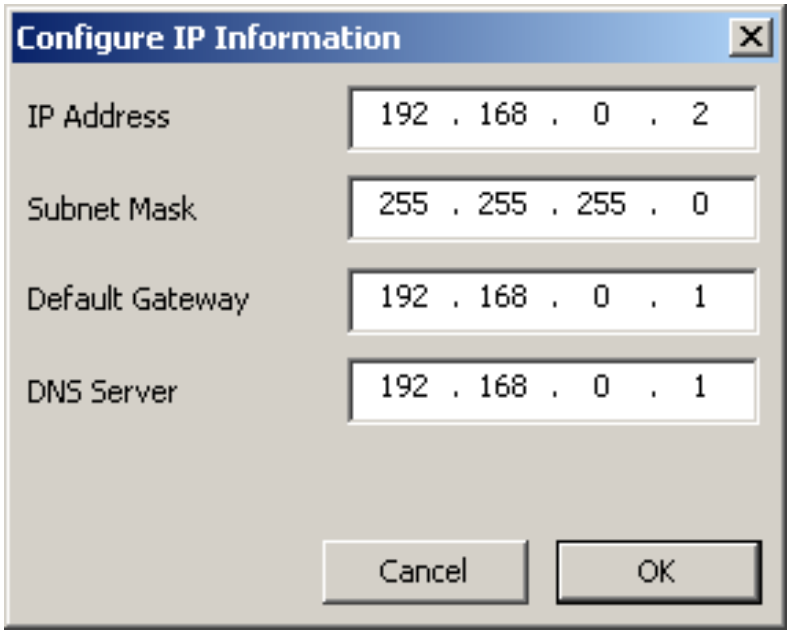
IP Configuration (Continued)

Once the IP Settings tab has been accessed, click in each field and enter the appropriate information for your network. Figure A-3.

Figure A-3: IP Settings



Additional IP configuration / networking information can be found at www.elanhomesystems.com/dealer.

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Port Forwarding

There are two ports on the wireless router that are forwarded to the System Controller in standard installations. Both ports can be changed if needed.

Port 2198 - **Remote Access:** this port enables a remote user to access the Viewer interface over the Internet. (On older systems, this was assigned to port 443.)

Port 2199 - Service: this port enables service connections, so that support personnel from ELAN or from the dealer's office can access the System Controller remotely to troubleshoot issues or change programming. (On older systems, this was assigned to port 5001.)

Figure A-4 shows the standard port forwarding settings. The "IP Address" should match the System Controller's IP address.

Figure A-4: Port Forwarding

Product Page: DIR-655
Hardware Version: A3 Firmware Version: 1.11
D-Link
DIR-655
SETUP
ADVANCED
TOOLS
STATUS
SUPPORT
VIRTUAL SERVER
PORT FORWARDING
APPLICATION RULES
QOS ENGINE
NETWORK FILTER
ACCESS CONTROL
WEBSITE FILTER
INBOUND FILTER
FIREWALL SETTINGS
ROUTING
ADVANCED WIRELESS
WISH
WI-FI PROTECTED SETUP
ADVANCED NETWORK
PORT FORWARDING
This option is used to open multiple ports or a range of ports in your router and redirect data through those ports to a single PC on your network. This feature allows you to enter ports in various formats including, Port Ranges (100-150), Individual Ports (80, 68, 888), or Mixed (1020-5000, 689).
Save Settings
Don't Save Settings
24 -- PORT FORWARDING RULES
Ports to Open
Name
IP Address
TCP
UDP
Schedule
Inbound Filter
Application Name
Computer Name
Always
Allow All
HL Old
192.168.1.104
443
TS Old
5001
OH Rem
2198
OH Ser
2199
Helpful Hints...
Check the Application Name drop down menu for a list of predefined applications. If you select one of the predefined applications, click the arrow button next to the drop down menu to fill out the corresponding field.
You can select a computer from the list of DHCP clients in the Computer Name drop down menu, or you can manually enter the IP address of the LAN computer to which you would like to open the specified port.
Select a schedule for when the rule will be enabled. If you do not see the schedule you need in the list of schedules, go to the Tools → Schedules screen and create a new schedule.
You can enter ports in various formats:
Range (50-100)
Individual (80, 68, 888)
Mixed (1020-5000, 689)
More...

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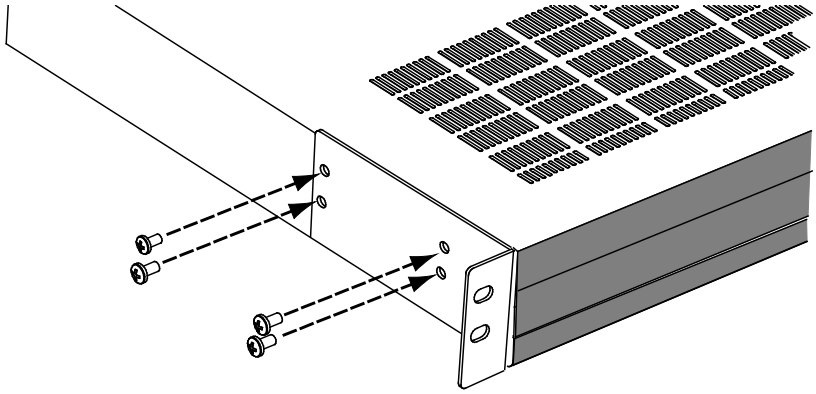
Appendix B: Rack Mounting

When mounting the HC6/HC12 in an equipment rack, use the included Rack Mount Brackets for secure mounting. The HC6/HC12 requires one rack space.

Keep in mind heat management. The System Controller should be mounted below heat sources like amplifiers. Provide adequate cooling, especially in enclosed racks or cabinets.

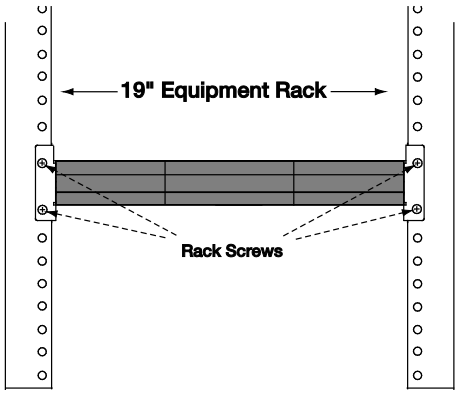
1: Ensure that the brackets are flush with the front of the unit. Install each of the eight screws (included) through the side mounting flanges into the holes in the sides of the unit as shown in Figure B-1. Hand tighten screws! Over-tightening could damage the chassis.

Figure B-1



2. Once the brackets are securely mounted, install the entire assembly into a standard 19" equipment rack from the front using four rack screws (not included). (Fig. B-2)

Figure B-2



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Specifications

Item	Description
Connections	Connector Type
AC Power	3-Prong Heavy Duty Cord
RS-232 Ports (6-HC6 / 12-HC12)	RJ-45 (EIA 561 pinout)
VIA!NET IN/OUT	RJ-45
ELAN Sense Inputs (6)	3.5mm Connectors (stereo)
IR Outputs (6)	3.5mm Connectors (mono)
All IR Output	3.5mm Connector (mono)
IR Link Outputs (12)	DB-15
External IR Input	3.5mm Connector (quad)
Programming	RJ-45 (Ethernet Port)
Relay	3-position screw terminals
Modem	USB
Audio Outputs	RCA
Video	Component Video
Internal Player Audio Output	
Frequency Response	20 to 20KHz - +/-/1dB
THD+ Noise (@1KHz)	<0.006%
Signal-to-Noise (A Weighted)	>102dB
Hard Drive Capacity (HC12 Only)	500GB
General	
Power Consumption	110-240V ~50-60 Hz - 60W
Relay Rating	24V AC/DC, 1 Amp Maximum
3.5mm IR Outputs	12VDC
IR Link Outputs	3VDC
Video Inputs	
Component Video Input	1V Peak-to-Peak Nominal
Input Impedance	75 Ohm
Video Outputs	
Component Video Outputs	1V Peak-to-Peak Nominal
Output Impedance	75 Ohm
Video Gain	Unity
Dimensions w/Feet	17.00”W x 2.25” H x 14” D (431.8mm W x 57.2mm H x 355.6mm D)
1U w/out feet	
Weight	
Unit Weight	10 lbs (4.54 kg)
Carton Weight	12 lbs (5.44 kg)

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LIMITED WARRANTY

HC6/HC12

ELAN HOME SYSTEMS, L.L.C. ("ELAN") warrants the HC6/HC12 System Controller to be free from defects in materials and workmanship for the period of two years (2 years) from date of purchase. If within the applicable warranty period above purchaser discovers that such item was not as warranted above and promptly notifies ELAN in writing, ELAN shall repair or replace the item at the company's option. This warranty shall not apply (a) to equipment not manufactured by ELAN, (b) to equipment which shall have been installed by other than an ELAN authorized installer, (c) to installed equipment which is not installed to ELAN's specifications, (d) to equipment which shall have been repaired or altered by others than ELAN, (e) to equipment which shall have been subjected to negligence, accident, or damage by circumstances beyond ELAN's control, including, but not limited to, lightning, flood, electrical surge, tornado, earthquake, or other catastrophic events beyond ELAN's control, or to improper operation, maintenance or storage, or to other than normal use of service. With respect to equipment sold by, but not manufactured by ELAN, the warranty obligations of ELAN shall in all respects conform to the warranty actually extended to ELAN by its supplier. The foregoing warranties do not cover reimbursement for labor, transportation, removal, installation or other expenses which may be incurred in connection with repair or replacement. Except as may be expressly provided and authorized in writing by ELAN, ELAN shall not be subject to any other obligations or liabilities whatsoever with respect to equipment manufactured by ELAN or services rendered by ELAN.

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